CEL-MAR®
Zakład Informatyki i Elektroniki

User manual

ADA-13040MG
ETHERNET to RS485/RS422 Converter with MODBUS GATEWAY

Copyright © 2001-2014 CEL-MAR sp.j.

Contents

1. GENERAL INFORMATION....4
1.1. WARRANTED INFORMATION....4
1.2. GENERAL CONDITIONS FOR SAFE USE....4
1.3. CE LABEL....4
1.4. ENVIRONMENTAL PRESERVATION....4
1.5. SERVICE AND MAINTENANCE....4
2. PRODUCT INFORMATION....4
2.1. PROPERTIES....4
2.2. DESCRIPTION....5
2.3. ETHERNET NETWORK COMMUNICATION....5
2.3.1. TCP/UDP SOCKED MODE COMMUNICATIONS....5
2.3.2. COMMUNICATIONS IN THE VIRTUAL SERIAL PORT MODE (RealPort)....5
2.3.3. COMMUNICATIONS IN THE SERIAL BRIDGE MODE....6
2.3.4. COMMUNICATIONS IN THE INDUSTRIAL AUTOMATION MODE (Modbus Gateway)....6
2.3.5. OTHER COMMUNICATION TYPES....6
3. INSTALLATION....6
3.1. ASSEMBLING....6
3.2. ETHERNET NETWORK CONNECTION....6
3.2.1. CONNECTING TO NETWORK ADAPTER OF PC....7
3.2.2. CONNECTING FOR OPERATING IN REALPORT MODE....7
3.2.3. CONNECTION FOR OPERATING IN TCP & UDP SERIAL BRIDGE MODE....8
3.2.4. CONVERTERS CONNECTION AS MODBUS GATEWAY....9
3.3. RS485/RS422 BUS CONNECTION....10
3.3.1. CONNECTION TO 4-WIRE RS422 BUS....10
3.3.2. CONNECTION TO 4-WIRE RS485(4W) BUS....10
3.3.3. CONNECTION TO 2-WIRE RS485 BUS....10
3.3.4. LINE TERMINATION Rt of RS485 BUS....11
3.4. POWER SUPPLY CONNECTION....11
4. ACTIVATION....11
5. CONFIGURATION....11
5.1. RS485/ RS422 OPERATING MODE....11
5.2. INITIAL CONFIGURATION USING ADAFINDER SOFTWARE....12
5.2.1. ADAFINDER INSTALLATION....12
5.2.2. NETWORK SETTING....12
5.3. CONFIGURATION AND MANAGEMENT BY THE USE OF INTERNET BROWSER....13
5.3.1. NETWORK CONFIGURATION....14
5.3.2. SERIAL PORT CONFIGURATION....14
5.3.2.1. SERIAL PORT PROFILE CONFIGURATION (OPERATING MODE)....14
5.3.2.1.1. REALPORT (VIRTUAL PORT) CONFIGURATION....15
5.3.2.1.2. TCP SOCKETS CONFIGURATION....15
5.3.2.1.2.1. TCP SERVER AND CLIENT CONFIGURATION....15
5.3.2.1.2.2. THE 'ENABLE TCP KEEP-ALIVE' OPTION CONFIGURATION....16
5.3.2.1.2.3. SERIAL PORT TRANSMISSION PARAMETERS CONFIGURATION....17
5.3.2.1.3. UDP SOCKETS CONFIGURATION....17
5.3.2.1.3.1. UDP CLIENT & SERVER CONFIGURATION IN CASE OF MASTER DEVICE....17
5.3.2.1.3.2. UDP CLIENT & SERVER CONFIGURATION IN CASE OF SLAVE DEVICE....18
5.3.2.1.3.3. SERIAL PORT TRANSMISSION PARAMETERS....19
5.3.2.1.4. SERIAL BRIDGE PROFILE CONFIGURATION....19
5.3.2.1.4.1. SERIAL PORT TRANSMISSION PARAMETERS....19
5.3.2.1.5. INDUSTRIAL AUTOMATION (MODBUS GATEWAY) CONFIGURATION....19
5.3.2.1.5.1. CONFIGURATION FOR COMMUNICATION WITH DEVICES MODBUS-MASTER TYPE....19
5.3.2.1.5.2. CONFIGURATION FOR COMMUNICATION WITH MODBUS-SLAVE TYPE DEVICE....21
5.3.2.1.5.3. SERIAL PORT TRANSMISSION PARAMETERS....23
5.3.3. SYSTEM SETTINGS....23
5.3.4. USERS CONFIGURATION....23
5.3.4.1. CHANGING USER MANE AND PASSWORD....23
5.3.4.2. ADDING NEW USER WITH LIMITED PERMISSIONS FOR CONFIGURATION OR MANAGEMENT....23
5.3.5. MANAGMENT....24
5.3.5.1. SERIAL PORTS MANAGEMENT....24
5.3.5.2. CONNECTIONS MANAGMENT....24
5.3.6. ADMINISTRATION....24
5.3.6.1. FILE MANAGEMENT....24
5.3.6.2. BACKUP & RESTORE CONFIGURATION....24
5.3.6.3. FIRMWARE UPDATE....24
5.3.6.4. FACTORY DEFAULT SETTINGS....24
5.3.6.5. SYSTEM INFORMATION....24
5.3.6.6. REBOOT....24
5.3.6.7. LOGOUT – ENDING MANAGEMENT AND CONFIGURATION....24

6. USING VIRTUAL PORT SERVICE [REALPORT] 25
6.1. VIRTUAL PORT DRIVER INSTALLATION IN WINDOWS XP 25
6.2. REALPORT CONFIGURATION IN WINDOWS XP 25
7. FACTORY DEFAULT 27
8. PROBLEMS 27
9. VERSIONS 27
10. SPECIFICATION 27

1. GENERAL INFORMATION

Thank you for your purchase of CEL-MAR Company product. This product has been completely tested and is covered by two year warranty on parts and operation from date of sale.
If any questions or problems arise during installation or use of this product, please do not hesitate to contact Technical Support at +48 41 362-12-46 or e-mail support@cel-mar.pl.

1.1. WARRANTED INFORMATION

The **ADA-13040MG** converter is covered by a two year warranty from date of sale. In case of being damaged it will be repair or the damaged component will be replace. The warranty does not cover damage caused from improper use, materials consumption or any unauthorized changes. If the product does not function (is damaged), or not operate in accordance with the instructions, will be repaired or replaced.
All warranty and no warranty repairs must be returned with paid transport and insuring to the **CEL-MAR Company.**
CEL-MAR Company under no circumstances won't be responsible for ensuing damage from improper using the product or as a result of random causes: the lightning discharge, the flood, the fire and the like.
CEL-MAR Company is not be held responsible for damages and loss including: loss of profits, loss of data, pecuniary losses ensuing from using or the impossibility of using this product.
In specific cases CEL-MAR Company discontinue all warranties and in particular do not follow the user manual and do not accept terms of warranty by the user.

1.2. GENERAL CONDITIONS FOR SAFE USE

The device should be installed in a safe and stable places (eg, electroinstallation cabinet), the powering cable should be arranged so as not to be exposed to trampling, attaching, or pulling out of the circuit.
Do not put device on the wet surface.
Do not connect devices for nondescript powering sources,
Do not damage or crush powering wires.
Do not make connection with wet hands.
Do not adapt, open or make holes in casings of the device!
Do not immerse device in water or no other liquid.
Do not put the fire opened on device sources: candles, an oil lamps and the like.
Complete disable from the supply network is only after disconnecting the power supply circuit voltage.
Do not carry out the assembly or dis-assembly of the device if it is enabled. This may result to short circuit and damage the device.

1.3. CE LABEL

CE symbol on organizing the company CEL-MAR a conformity of the device to the directive of the electromagnetic **EMC 2004/108/WE** (Electromagnetic Compatibility Directive). The declaration of the agreement is accessible through the contact with the technical service at the address e-mail: serwis@cel-mar.pl or on the phone at the +48 41 362-12-46.

1.4. ENVIRONMENTAL PRESERVATION

This label on the device inform about putting expended device with other waste materials. Device should send to the recycling. (In accordance with the act about the Electronic Appliance Expended from day 29 of July 2005)

1.5. SERVICE AND MAINTENANCE

The ADA-13040MG converter does not require the servicing and maintenance.
Technical support is available at number +48 41 362-12-46 in 8.00-16.00, from Monday to Friday or e-mail support@cel-mar.pl.

2. PRODUCT INFORMATION

The Converter is delivered with: User Manual, antenna and ADANet software CD.

2.1. PROPERTIES

- Operating on ETHERNET network- IEEE 802.3 standard,
- 10/100BaseT physical layer,
- Connecting via Rj45 connector,
- Baud rate 10/100Mbps (auto-sensing),
- Full or half duplex (auto-sensing) operates mode,
- Protocols: TCP, UDP, DHCP, SNMP, SSL/TLS, Telnet, Rlogin, LPD, HTTP/HTTPS, SMTP, ICMP, IGMP, ARP,
- Integrated WWW sever for converter configuration,
- Configuration of net services according to user personal setting,
- Static or dynamic IP address (added by DHCP server),
- Diagnostics of serial and network port,
- Encoded transmission: DES (56-bit), 3DES (168-bit), AES (128/256-bit),
- Operating modes: virtual serial port, serial bridge TCP, serial bridge UDP, TCP sockets, UDP sockets, MODBUS Data Gateway,
- Operating on RS485 bus 2 and 4-wires, RS422 bus 2 and 4-wires,
- RS485/RS422 baud rates (bps): 50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400,
- RS485/422 data format - Number of data bits: 5, 6, 7, 8; Parity checking: None, Odd, Even, Constantly 1, Constantly 0; Stop Bits: 1, 2,
- Transparent for all protocols, which the data format is compatible with the above specifications of RS485/422 interface eg MODBUS, DNP, PROFIBUS and others,
- Integrated protocols converter MODBUS-TCP to MODBUS-RTU/ASCII (MODBUS Data Gateway),
- Operating in modes: MODBUS-RTU Master/Slave and MODBUS-ASCII Master/Slave,

- Power supply 10 - 30 VDC stable min. 3W,
- ~ 3000V= optoizolation in signal channel between ETHERNET and RS485/RS422 interface,
- 1000V= or 3000V= galvanic isolation between ETHERNET interface and power supply - depends on version,
- 1000V= or 3000V= galvanic isolation between RS485/RS422 interface and power supply - depends on version,
- Connection RS485/RS422 interface via screw terminal block,
- Implemented short circuit protection and over-voltage protection on RS485/RS422 network,
- Protection against power supply reverse connection,
- DIN 43880 standard - mounting in typical electro-installation unit,
- Rail mounting according to DIN35 / TS35 standard,
- Dimensions (W x D x H) 53mm x 58mm x 90mm.

2.2. DESCRIPTION

The **ADA-13040MG** converter is used for data transmission between devices equipped with RS485/ RS422 interface via LAN/WAN network. In the ETHERNET network converter can operate in Virtual Serial Port mode, TCP serial bridge mode, UDP serial bridge mode, TCP sockets, UDP sockets and MODBUS Data Gateway . The MODBUS Data Gateway converts MODBUS-RTU master/slave and MODBUS-ASCII master/slave protocol to MODBUS-TCP and inversely. This allows for integrate MODBUS-RTU/ASCII with MODBUS-TCP devices within one network.
Converter uses protocols: TCP, UDP, DHCP, SNMP, SSL/TLS, Telnet, Rlogin, LPD, HTTP/HTTPS, SMTP, ICMP, IGMP, ARP. It has a built-in WWW web server what allow you to configure and menage it via internet browser. The ADA-13040MG supports the baud rate 230,4 kbps via RS485/RS422 interface and use RX+,RX-,TX+(A),TX-(B) signals. It is possible to connect 32 devices operating in half duplex mode to RS485 network constructed on the ADA-13040MG.
The Converter is adapted to supply an external voltage source fron 10V to 30V and power 3W. ADA-13040MG has implemented protection against opposite polarization of power supply and over-voltage protection on RS485/RS422 network. Converter has galvanic isolation between ETHERNET and RS485/RS422 interface and power supply and optoisolation in signal channel between ETHERNET and RS485/RS422 interface.
We provide with converter the drivers which installed in the operating system (Windows 98ME,2000,XP,2003,Vista,7), will create an additional COM port. This port is the next free number eg COM3, can be used like a standard COM port. However it is not the real port existing in a computer, but only a virtual, created by the system, therefore some programs running under DOS and links to this COM port may not function properly.

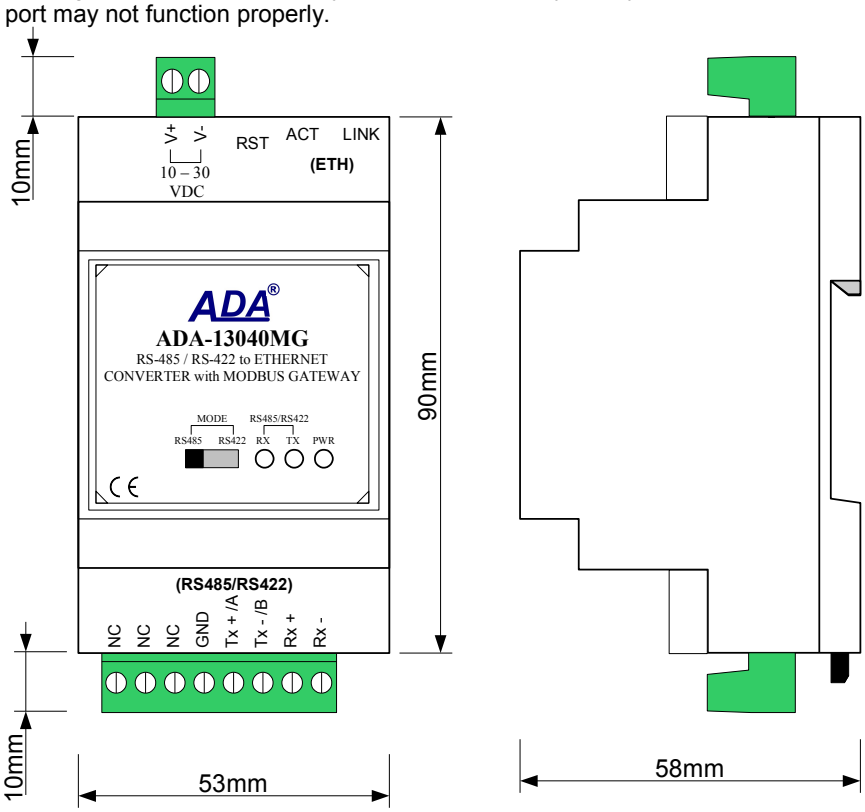

Fig. 1. View of ADA-13040MG

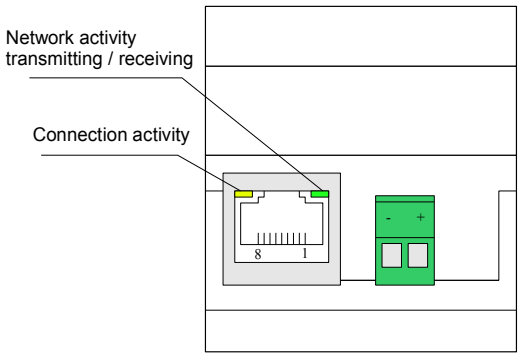

Fig. 2. View of the ETHERNET RJ45 connector

2.3. ETHERNET NETWORK COMMUNICATION

2.3.1. TCP/UDP SOCKED MODE COMMUNICATIONS

Communication in the mode TCP/UDP sockets allows an application SCADA, MMI e.t.c., to transfer data to the serial port of ADA-13040MG via Ethernet network by the use of client and server TCP/UDP services.

2.3.2. COMMUNICATIONS IN THE VIRTUAL SERIAL PORT MODE (RealPort)

Communication in the virtual serial port mode allows an application SCADA, MMI e.t.c., to transfer data to the serial port of ADA-13040MG via Ethernet network, by the use virtual COM port , created in an operating system.

2.3.3. COMMUNICATIONS IN THE SERIAL BRIDGE MODE

Communication in the serial bridge mode allows to transfer data via Ethernet network between serial port of the Servers ports in one-to-one topology or one-to-many by the use of client and server TCP/UDP services.

2.3.4. COMMUNICATIONS IN THE INDUSTRIAL AUTOMATION MODE (Modbus Gateway)

Communication in the MODBUS Gateway (IA) allows conversion of MODBUS-RTU master/slave protocol and MODBUS-ASCII master/slave protocol to MODBUS-TCP protocol and inversely. It's let to integrate MODBUS-RTU/ASCII devices with MODBUS-TCP devices in a single network.

2.3.5. OTHER COMMUNICATION TYPES

The ADA-13040MG converter can be configured in other communication types, like:
– terminal mode,
– modem emulation mode,
– console mode,
– user mode.
However, in the case of RS485/RS422 converter, it will not be able to work properly in these modes, as they relate to the full RS232 interface.

3. INSTALLATION

This chapter will show how correctly connect ADA-13040MG to RS485/422 network, LAN/WAN network and power supply.
To reduce disturbance from environment, it is recommended to:
– use shielded twisted multipair type cables, which shield should be connected to the grounding on one end of the cable,
– lay signal cables at a distance not less than 25 cm from power cables,
– use suitable diameter cable for power supply on account of voltage drop,
– use the interference eliminators for powering the converters installed in the range of some building,
– not powering the converters form power-circuit of devices generate large impulse disturbance like contactors, relays, inverters.

3.1. ASSEMBLING

The ADA-13040MG converter case is adapted to assembly on TS-35 (DIN35) rail. To install the device on TS-35 should be the upper part of the casing put hooks on the terminal and then press the bottom of the cover until you hear a characteristic "Click" sound.

3.2. ETHERNET NETWORK CONNECTION

The ADA-13040MG has to be connected to ETHERNET network by the use of the switch, the HUB or directly to the PC network adapter.
The table below shows preparing of the straight cable for converter connection to switch or hub.

Table 1. The straight cable for connection to switch or hub.

RJ45 Pin No.	Signal	Wire Color EIA/TIA 568B	Straight cable UTP 4x2x0,5	Wire Color EIA/TIA 568B	Signal	RJ45 Pin No.
1	TX+	White-Orange		White-Orange	TX+	1
2	TX-	Orange		Orange	TX-	2
3	RX+	White-Green		White-Green	RX+	3
4	Not used	Blue		Blue	Not used	4
5	Not used	White-Blue		White-Blue	Not used	5
6	RX-	Green		Green	RX-	6
7	Not used	White-Brown		White-Brown	Not used	7
8	Not used	Brown		Brown	Not used	8

The table below shows preparing of cross-over cable for the converter connection to PC network adapter or connections converters together for functioning as point-to-point serial bridge.

Table 2. The cross-over cable for connection to PC network adapter or connections converters together for functioning as point-to-point serial bridge.

RJ45 Pin No.	Signal	Wire Color EIA/TIA 568B	Cross-Over Cable UTP 4x2x0,5	Wire Color EIA/TIA 568B	Signal	RJ45 Pin No.
1	TX+	White-Orange		White-Green	TX+	1
2	TX-	Orange		Green	TX-	2
3	RX+	White-Green		White-Orange	RX+	3
4	Not used	Blue		Blue	Not used	4
5	Not used	White-Blue		White-Blue	Not used	5
6	RX-	Green		Orange	RX-	6
7	Not used	White-Brown		White-Brown	Not used	7
8	Not used	Brown		Brown	Not used	8

In the modular socket ETHERNET interface of converter, are implemented two LED's (Fig. 2):
- Green ACT signaling state of sending or receiving data,
- Orange LINK signaling active network connection.

The ADA-13040MG converter can function in the ETHERNET network as:
- virtual serial bridge [RealPort],
- TCP serial bridge,
- UDP serial bridge.

Additional information about Ethernet connection will be describe in chapters below.

3.2.1. CONNECTING TO NETWORK ADAPTER OF PC

If there is not the switch or the HUB, it is possible to connect the ADA-13040MG directly to a network adapter of PC using the cross-over cable (Table 2). This connection can be used for converter configuration.

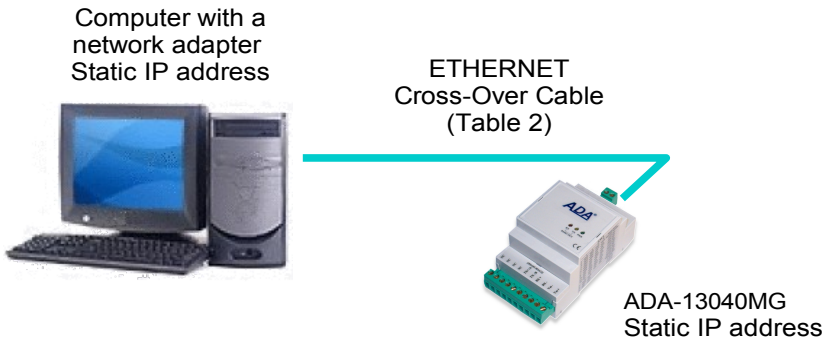

Fig. 3. Direct connection to PC

3.2.2. CONNECTING FOR OPERATING IN REALPORT MODE

Fig. 3 (above) and 4, 5 below show how correctly connect the ADA-13040MG to LAN, WAN network or PC to operating in virtual serial port mode (RealPort).
For direct connection of the converter to PC network adapter, use the cross-over cable (see Table 2) and for connection by the use of switch or HUB use the straight cable (see Table 1).

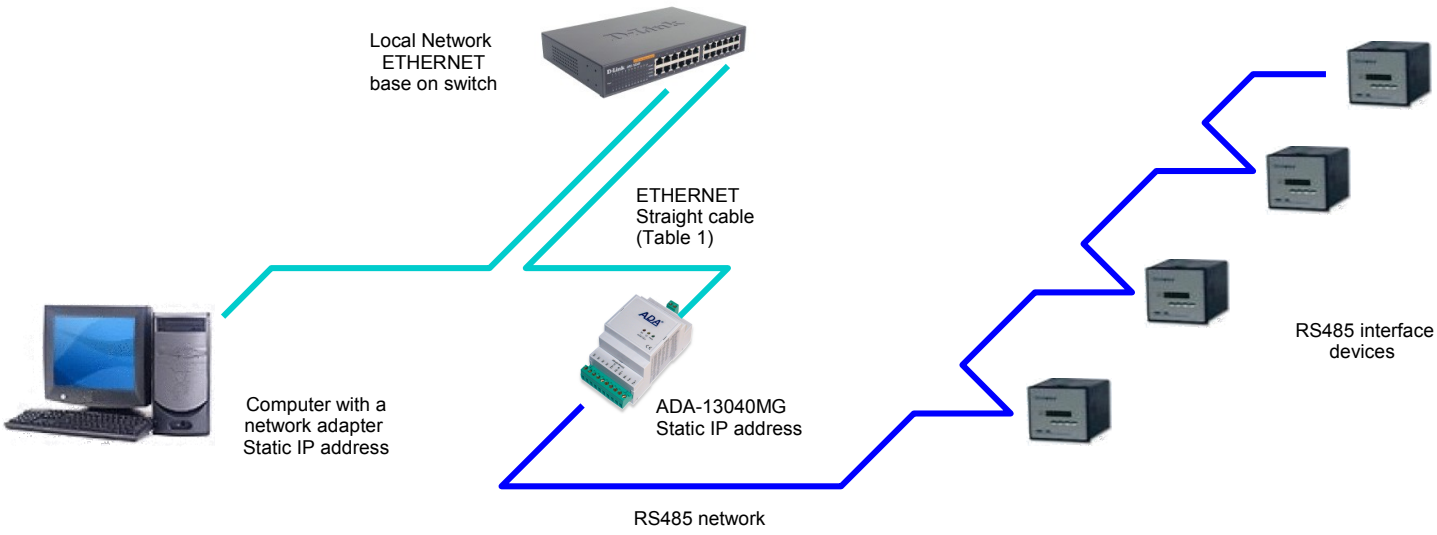

Fig. 4. The LAN connection via switch/hub to operating in the Real Port mode

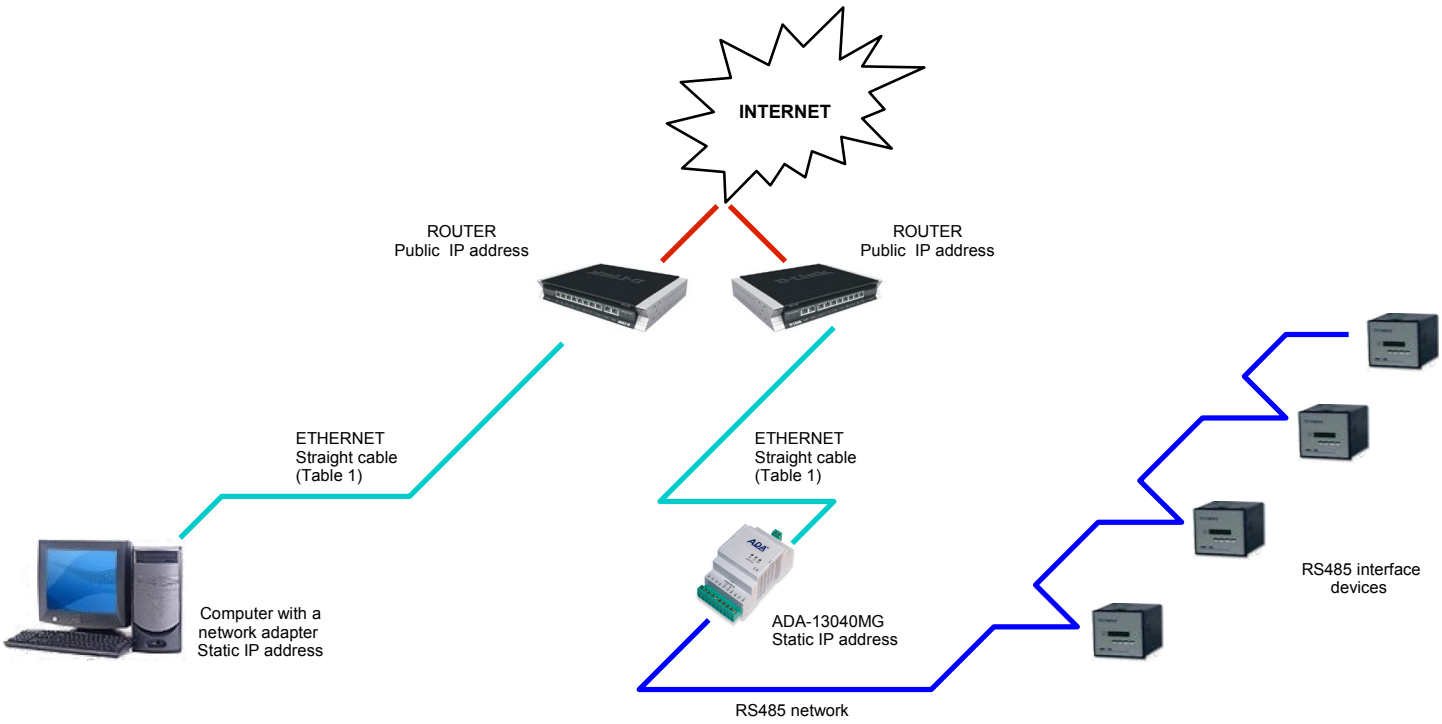

Fig. 5. The WAN connection to operating in the Real Port mode

3.2.3. CONNECTION FOR OPERATING IN TCP & UDP SERIAL BRIDGE MODE

Fig. 6, 7 below show how correctly connect the ADA-13040MG to ETHERNET network to functioning in TCP and UDP serial bridge mode.
For connection by the use of network devices (router, switch or HUB) use the straight cable (see Table 1).

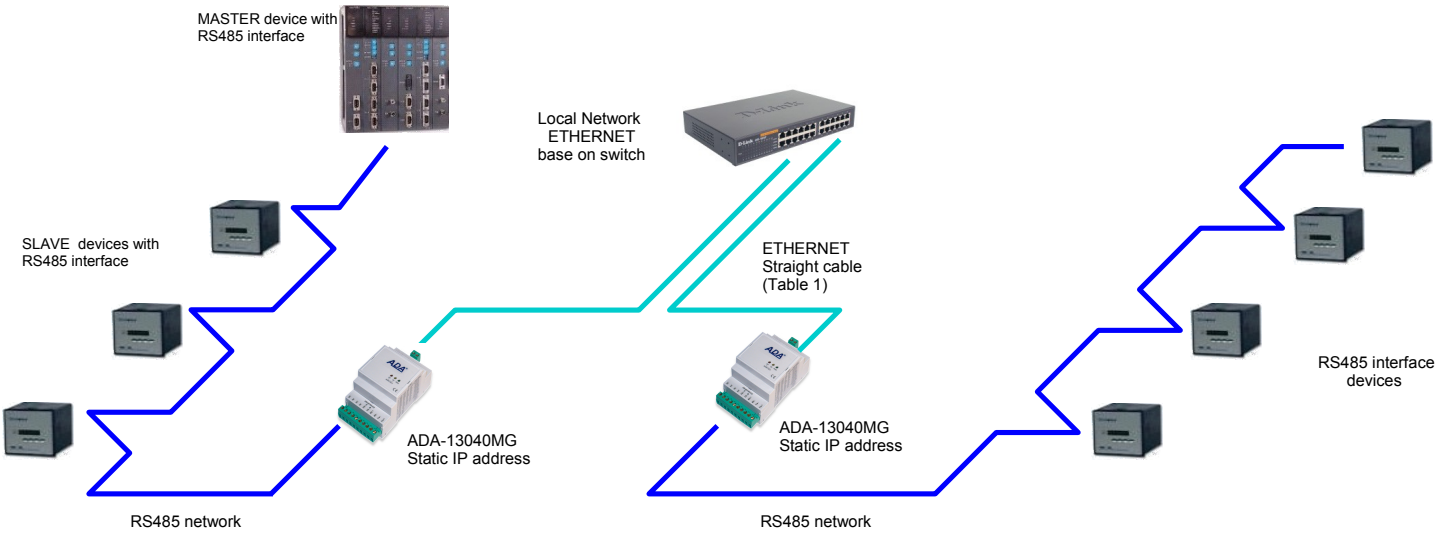

Fig. 6. The LAN connection to operating in the TCP/UDP serial bridge mode, one-to-one

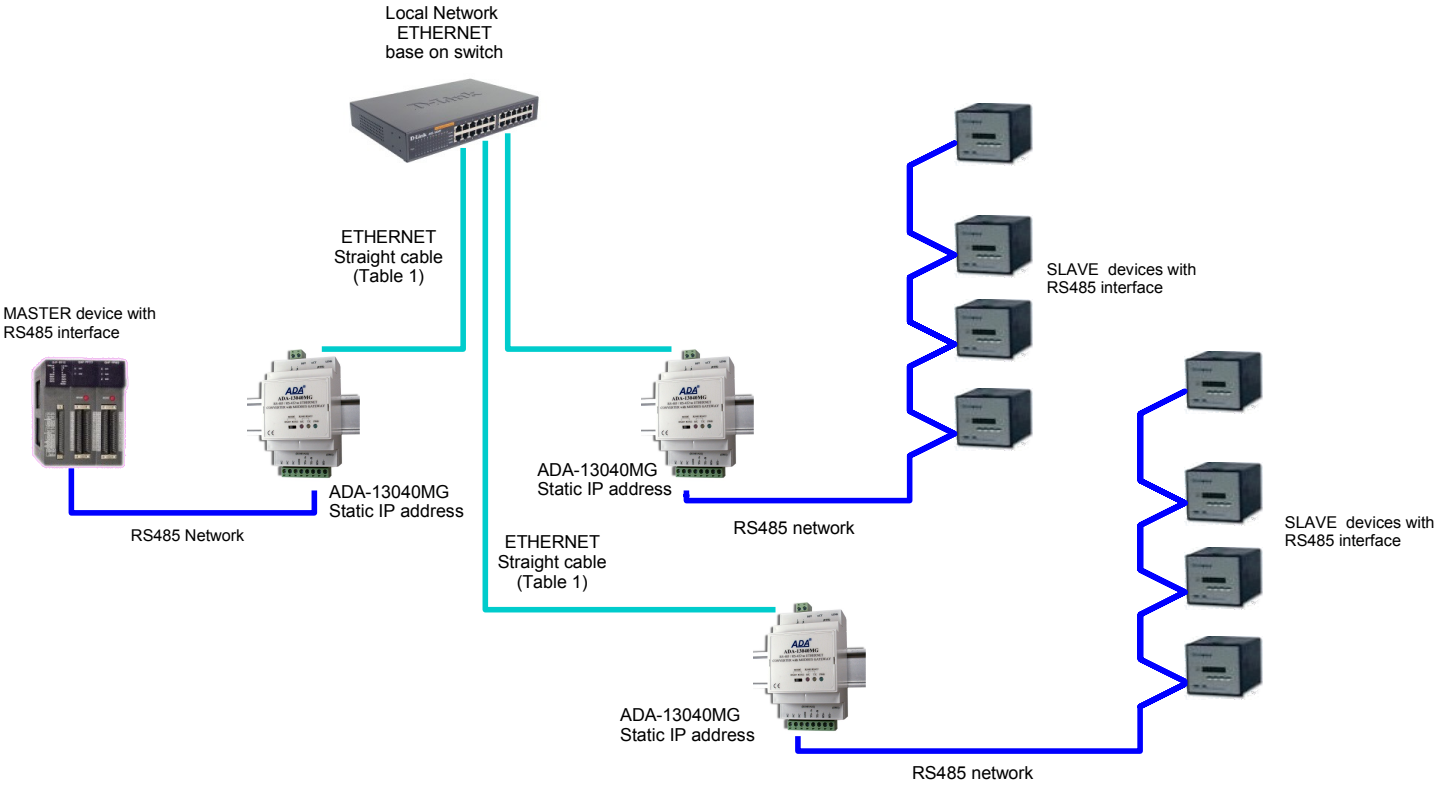

Fig. 7. The LAN connection to operating in the UDP serial bridge mode, one-to-many

3.2.4. CONVERTERS CONNECTION AS MODBUS GATEWAY

Figure 8 shows connection of ADA-13040MG to ETHERNET network ETHERNET(LAN) to operating in **Industrial Automation Mode (MODBUS Gateway)**. This type of connection allows to integrate MODBUS-TCP devices and MODBUS-RTU/ASCII devices in one network.

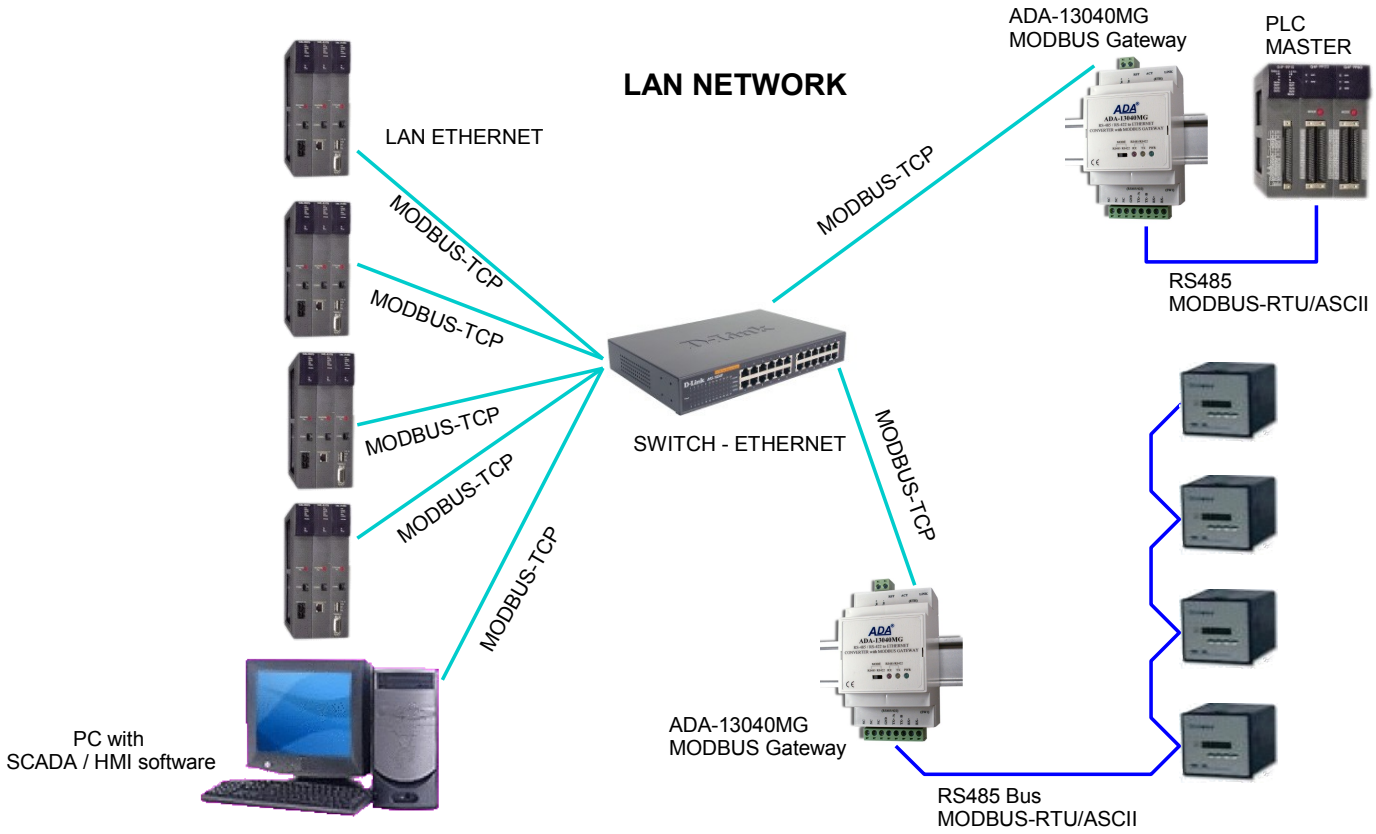

Fig. 8. Integration of Modbus-TCP MODBUS-RTU/ASCII into a single network using the ADA-13040MG

3.3. RS485/RS422 BUS CONNECTION

The RS485/RS422 interface is available in the ADA-13040MG on screw terminal block, labelled as: Tx+/A, Tx-/B, Rx+, Rx-.
The ADA-13040MG allows operating on the RS422 bus and the RS485 bus. Both buses require proper wiring.

3.3.1. CONNECTION TO 4-WIRE RS422 BUS

Before connection 4-wire RS422 bus, should be set the MODE switch on the front panel of ADA-13040MG in RS422 mode. Then connect wires of bus to terminals TX+/A, TX-/B, RX+, RX-, like below.

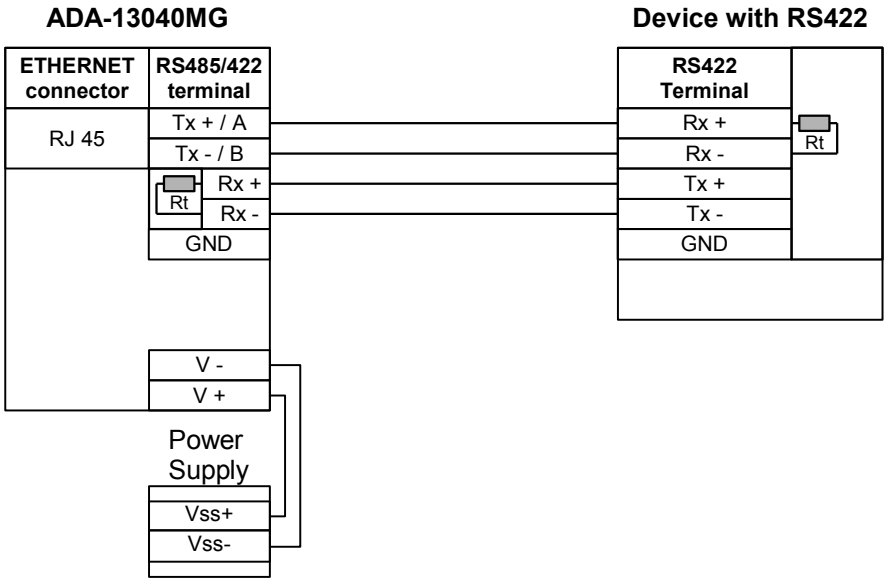

Fig. 9. Example connection of the RS422 device to ADA-13040MG

3.3.2. CONNECTION TO 4-WIRE RS485(4W) BUS

Before connection 4-wire RS485 Bus, should be set the MODE switch on the front panel of ADA-13040MG in RS485 mode. Connect wires of bus to terminals TX+/A, TX-/B, RX+, RX- , like below.

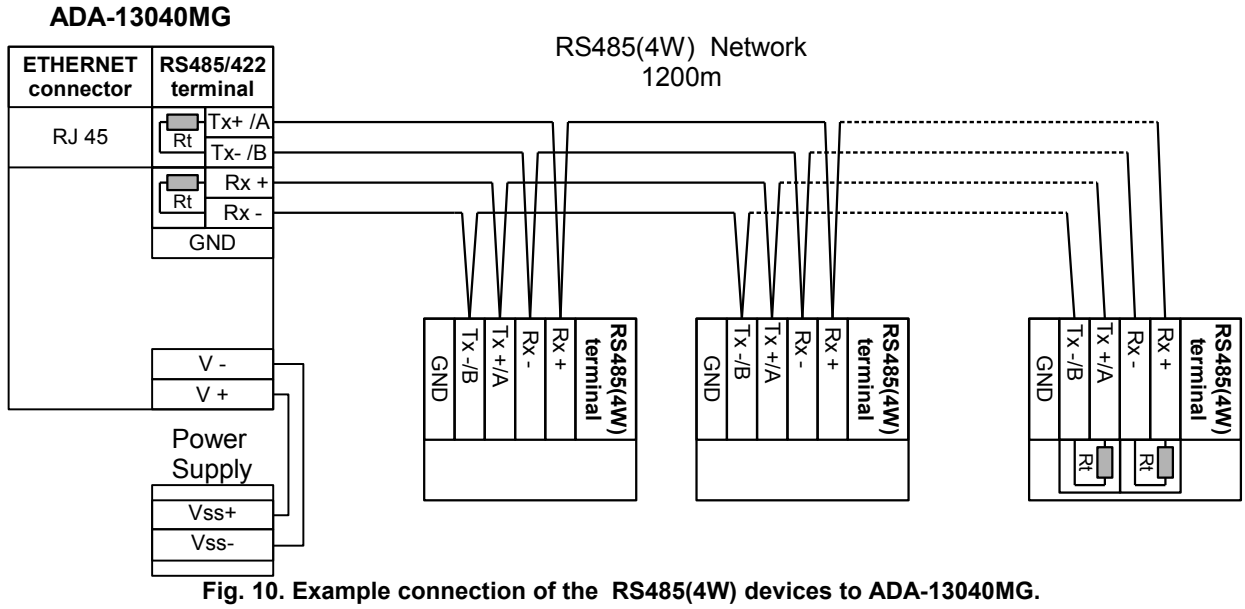

Fig. 10. Example connection of the RS485(4W) devices to ADA-13040MG.

3.3.3. CONNECTION TO 2-WIRE RS485 BUS

Most of the devices with RS485 interface, use 2-wire RS485 bus for data transmission.
Before connection 2-wire RS485 bus, should be set the MODE switch on the front panel of the ADA-13040MG in RS485 mode. Connect wires of bus to the terminals TX+/A, TX-/B, like below.

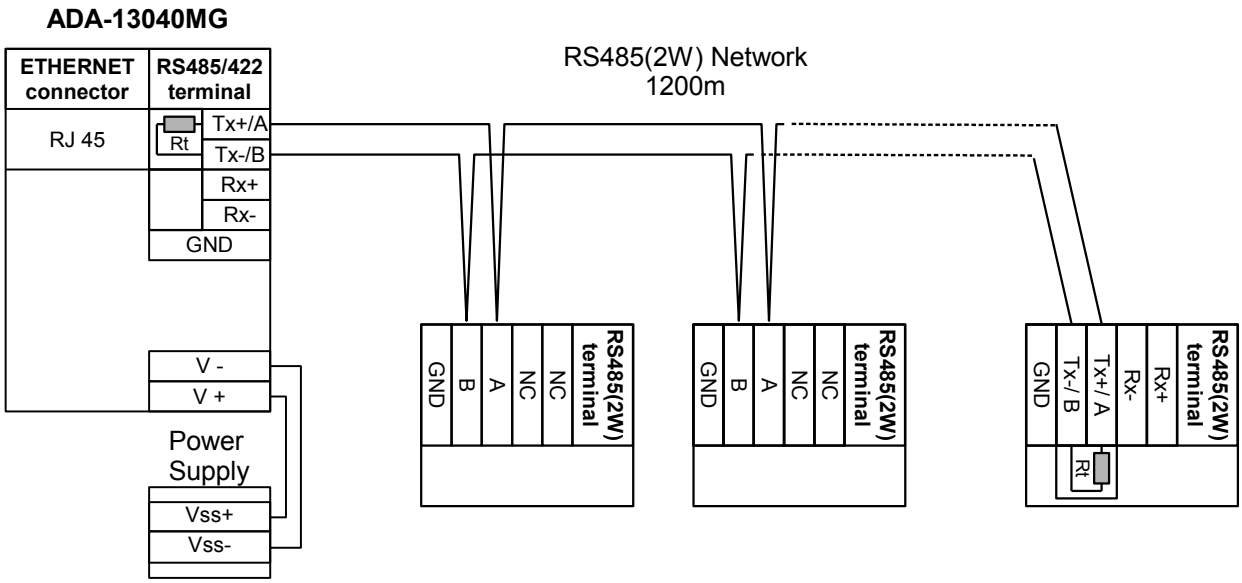

Fig. 11. Example connection of the RS485(2W) devices to ADA-13040MG

3.3.4. LINE TERMINATION Rt of RS485 BUS

The application of Line Termination (terminator) Rt = 120 ohms on the ends of the bus, will reduce electrical reflection in long data line at high baud rate. It is not needed below 9600Bd. For over 1000m @ 9600Bd or 700m @ 19200Bd the line termination should be used, if there are problems with proper transmission.
Example connection of Rt are shown on Fig. 9, 10, 11. The resistor Rt = 120 Ω.
The ADA-13040MG converter has two implemented terminators, connected to terminals Tx+/A – Tx-/B and Rx+ - Rx- by the use SW1 microswitch (see table below).

SW1	Description
SW1-1	ON – enable the terminator 120 Ω to terminals Tx+/A and Tx-/B OFF – disable the terminator 120 Ω to terminals Tx+/A and Tx-/B
SW1-2	ON – enable the terminator 120 Ω to terminals Rx+ and Rx- OFF – disable the terminator 120 Ω to terminals Rx+ and Rx-

3.4. POWER SUPPLY CONNECTION

The power supply to the ADA-13040MG should be DC (regulated) from the scope 10 V= to 30V= and nominal power more then 3W. Power cable from DC power supplies to device must not be longer than 3m. Observe the polarity, connect positive (+) of DC power supplies to V+ and negative (-) end to V- terminal. ADA-13040MG has the protection from opposite connection of power supply.

4. ACTIVATION

If connection was made properly a green LED PWR on front panel of converter should lit after power on, if not check polarization of connected power. When data is transmitted the ACT LED on RJ45 connector and RX, TX LED's on front panel should blink. This LED are described below:

LED	***Description***
RS485/RS422 interface & Power	
green PWR	Signalization of Power Supply
red RX	Signalization of data receiving by ADA-13040MG from RS485/RS422 port
yellow TX	Signalization of data transmission from ADA-13040MG through RS485/RS422 interface
ETHERNET interface	
yellow LINK	Signaling a valid connection to the network
green ACT	Signaling data transmission

5. CONFIGURATION

The ADA-13040MG converter like most of network devices should be configured for proper functioning, it's needed configuration of network services and network setting.
Below are described the stages of software installation and network setting configuration of converter.

5.1. RS485/ RS422 OPERATING MODE

Hardware configuration of RS485 or RS422 operating mode, should be configured by a setting of the MODE switch on the front panel of converter (fig.1).

5.2. INITIAL CONFIGURATION USING ADAFINDER SOFTWARE

5.2.1. ADAFINDER INSTALLATION

The initial configuration of network setting at the converter can be made by using ADAFinder or ADAWiz software. The installation is automatically after insert the CD (compact disc) to an optical drive. If the autorun doesn't start, should run the file setup.exe located in main CD catalogue. After installation the software ADAFinder and ADAWiz are available in ***Start->Programs->CEL-MAR->ADANet.***

5.2.2. NETWORK SETTING

The ADAFinder is use for configuration of converter's network setting.
Before running the ADAFinder should be disabled the System FireWall!
After running, the program is searching local network and if find ADA-13040MG, will add them to the list of available converters **[Devices:]** Fig.12.

To change the network setting of ADA-13040MG, should:

- select the converter from the list **[Devices:]** and press **[Configure IP Settings]**,
- in windows **[Set IP Address]** select option **'Automatically obtain network settings via DHCP'** (default setting) or **'Manually configure network setting'**. In case of manual configuration should be enter IP Address of the converter, Subnet Mask, Default Gateway and the Password (default: dbps) of the ADA-13040MG administrator for authorization of changes.
- press **[Apply]**, configuration will be saved to the converter and will restart. After message **'Operation made successfully'**, press **[Refresh List]** in ADAFinder window. After re-searching the lists od available converters **[Devices:]** will be refreshed.

Other buttons of the program main menu:

- selecting the converter from the list and pressing **[Reboot Device],** will make programmable reset of the converter – new configuration of network setting will be activated,
- selecting the converter from the list and pressing **[Device Information],** will show an information about setting of the converter,
- selecting the converter from the list and pressing **[Open Web Interface],** will run Internet browser and open the configuration page of the converter.

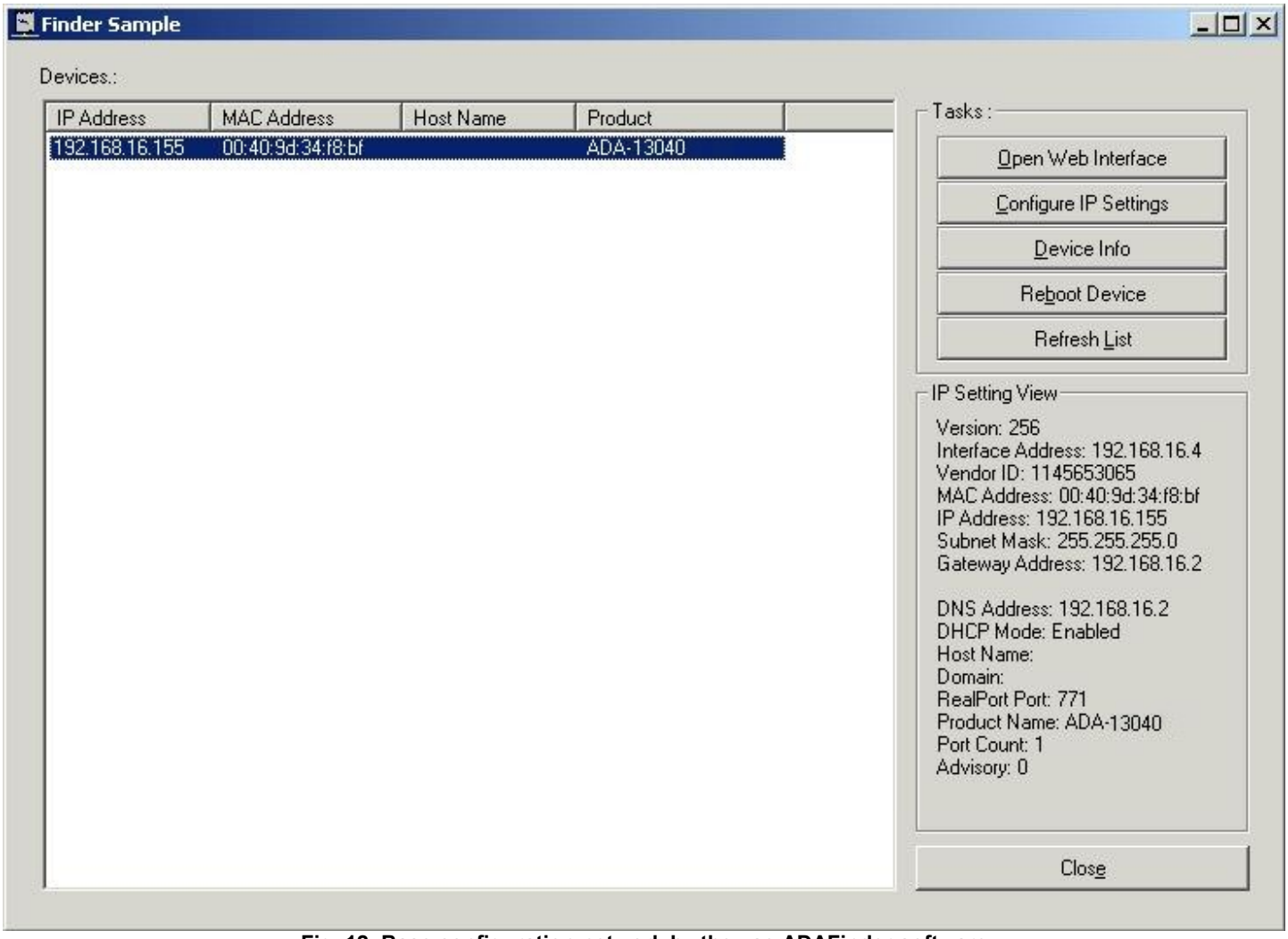

Fig. 12. Base configuration network by the use ADAFinder software

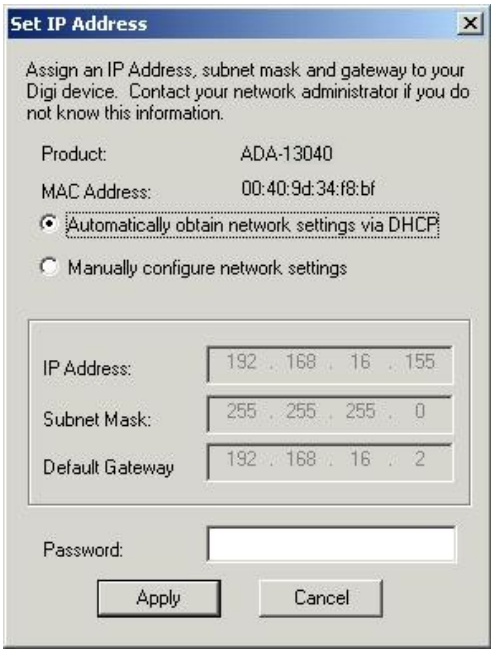
Set IP Address
Assign an IP Address, subnet mask and gateway to your Digi device. Contact your network administrator if you do not know this information.
Product: ADA-13040
MAC Address: 00:40:9d:34:f8:bf
Automatically obtain network settings via DHCP
Manually configure network settings
IP Address: 192 . 168 . 16 . 155
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway 192 . 168 . 16 . 2
Password:
Apply
Cancel

Fig. 13. ADAFinder configuration of IP network address

5.3. CONFIGURATION AND MANAGEMENT BY THE USE OF INTERNET BROWSER

Integrated WWW server to ADA-13040MG enable to easy configuration and diagnostics of LAN and WAN network devices by the use Internet browser.
For configuration open the Internet Browser and type the address **http://<converter-ip-address>/admin/administration.htm.** The login windows will open. Enter User name and Password as follow:

Username: root
Password: dbps

If the the Username and the Password are correct will open the page as below.

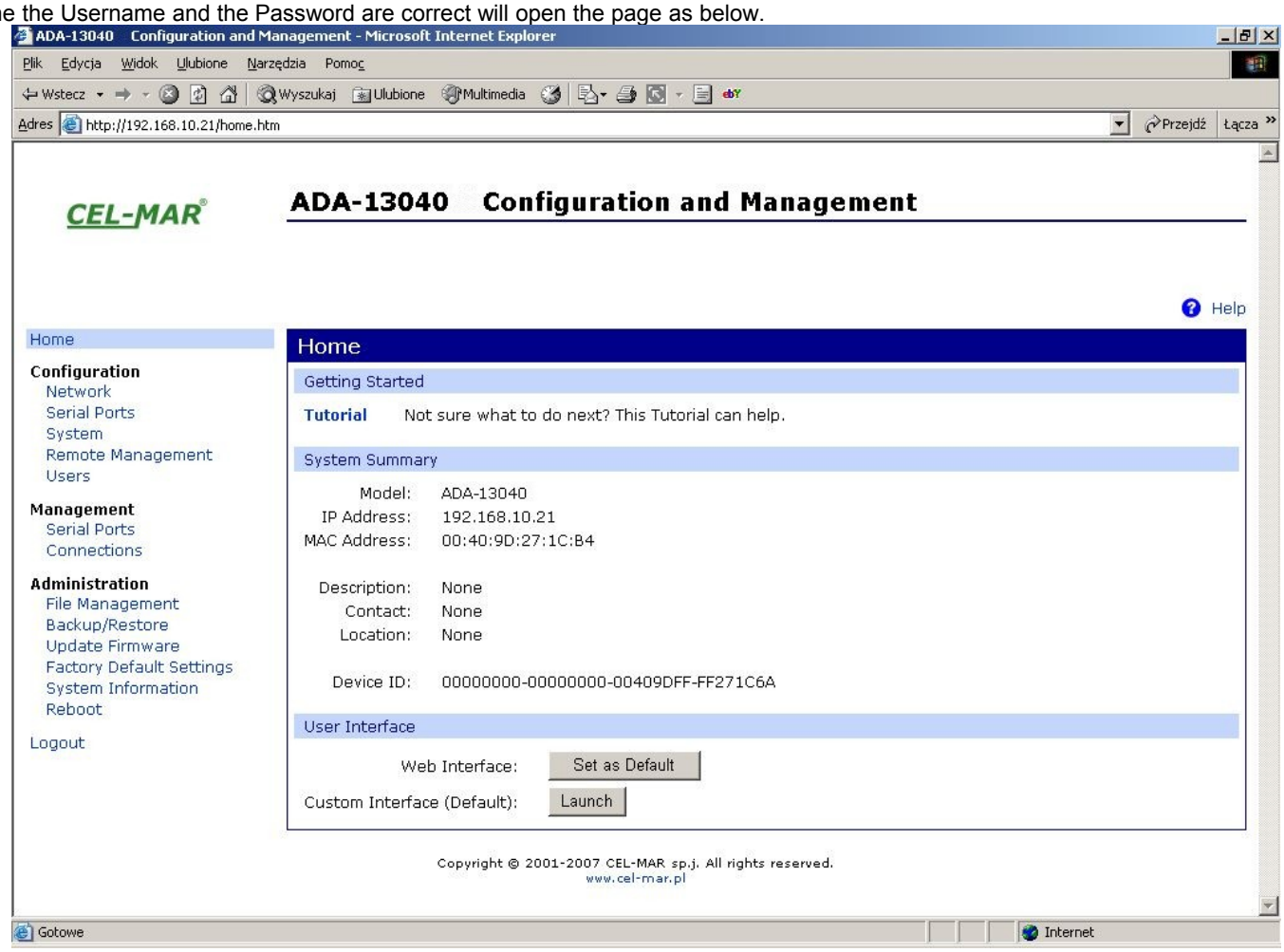

Fig 14. The web page for configuration and management of ADA-13040MG

5.3.1. NETWORK CONFIGURATION

To make a changes of default setting or new configuration of ADA-13040MG, select on left panel **Configuration -> Network** and then on right **[IP Settings]** (Fig.15) and make the selection: **Obtain an IP address automatically using DHCP** or **Use the following IP address** (in this option, enter IP Address of the converter, Subnet Mask, Default Gateway), press **[Apply]** for save. After the message **Changes have been saved successfully**, from left menu select **Administrator -> Reboot** on right press **[Reboot]**, will be programmable reset of the converter and new configuration of network setting will be activated.

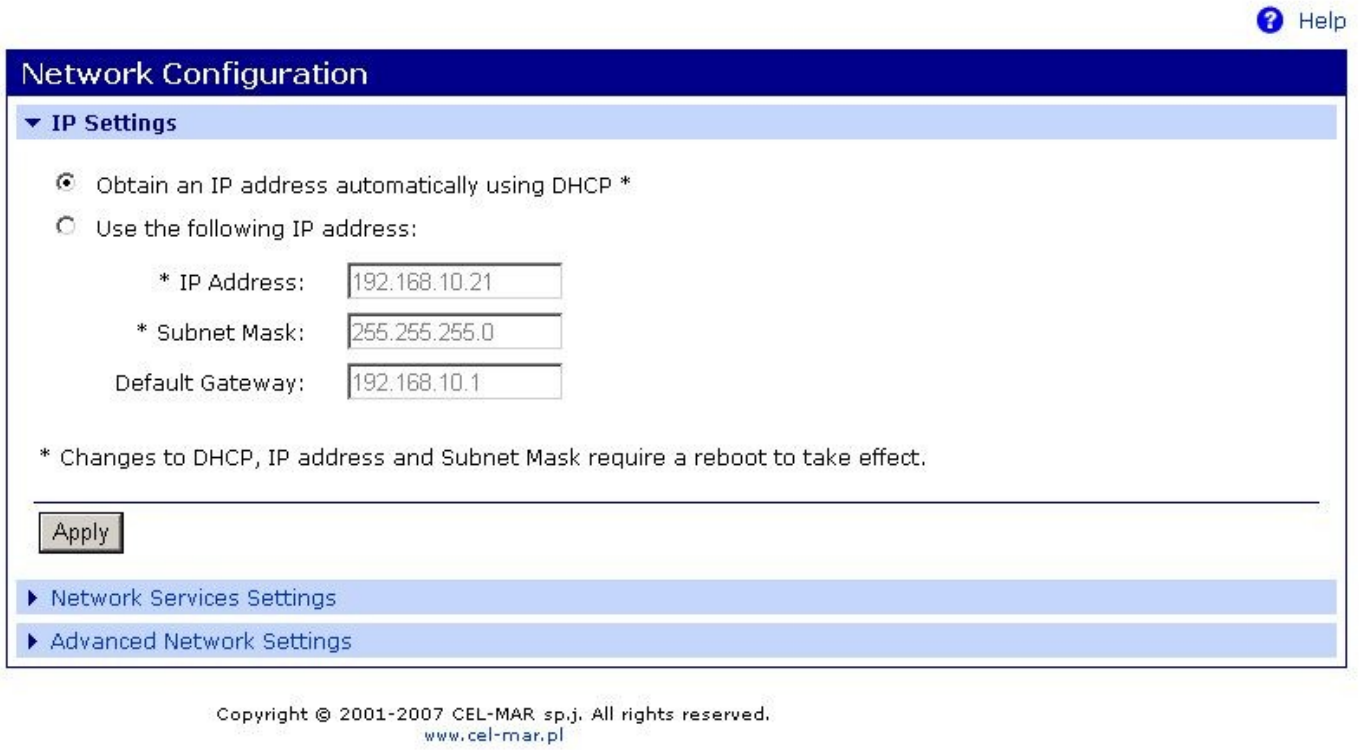

Fig. 15. The web page for network setting of ADA-13040MG

5.3.2. SERIAL PORT CONFIGURATION

The configuration of serial port of the ADA-13040MG converter includes: port description, setting of port profile (operating mode) and setting of serial transmission parameters (baud rate, data bits, parity, stop bits).
Select on left panel **Configuration -> Serial Ports** and then on a page **Serial Port Configuration** select **[Port 1],** will open the configuration details page, includes:

- Port Profile Settings,
- Basic Serial Settings,
- Advanced Serial Settings,

5.3.2.1. SERIAL PORT PROFILE CONFIGURATION (OPERATING MODE)

Select on right panel **Serial Port Configuration -> Port Profile Settings** and then press **Change Profile...** will open the page **Select Port Profile** for selection of available port profiles (fig. 16).
Configuration of profile used in typical solutions will be presented in next chapters.

The ADA-13040MG operates properly in profiles as follow:

- RealPort
- TCP Sockets
- UDP Sockets
- Serial Bridge
- Industrial Automation (Modbus Gateway)

Configuration of profiles will be presented in next chapters.

Select Port Profile...
Profiles allow you to easily configure serial ports by only displaying those items that are relevant to the current profile.
Select the profile below that best matches your configuration.
RealPort
The RealPort Profile allows you to map a COM or TTY port to the serial port. More...
Console Management
The Console Management Profile allows you to access a device's console port over a network connection. More...
TCP Sockets
The TCP Sockets Profile allows a serial device to communicate over a TCP network. More...
UDP Sockets
The UDP Sockets Profile allows a serial device to communicate using UDP. More...
Serial Bridge
The Serial Bridge Profile configures one side of a serial bridge. A bridge connects two serial devices over the network as if they were connected with a serial cable. More...
Local Configuration
The Local Configuration Profile allows you to connect standard terminals or terminal emulation programs to the serial port in order to use the serial port as a console to access the command line interface. More...
Industrial Automation
The Industrial Automation (IA) Profile allows you to control and monitor various IA devices and PLCs. More...
Modem Emulation
The Modem Emulation Profile allows you to configure the serial port to act as a modem. More...
PPP Server
The PPP Server Profile allows a serial device to connect and communicate over the TCP/IP network. More...
Custom
The Custom Profile is an advanced option to allow full configuration of the serial port. More...
Apply
Cancel

Fig. 16. Selection serial port profile web

5.3.2.1.1. REALPORT (VIRTUAL PORT) CONFIGURATION

Choosing **RealPort** (Virtual Port, Fig. 16) is configured the serial port of ADA-13040MG, for communication with virtual port COM of computer. Press [**Apply**] for save. After installation driver (RealPort) of virtual port COM (see chapter 6) in operating system, data sending by application to this port are transferred through WLAN/WAN to ADA-13040MG converter and are present on his serial port. The driver **RealPort** installation is presented in chapter 6. Normally **RealPort** service allows for one connection through WLAN/WAN, between computer and server port.
Connection from other computers to the converter will be not taken, what will cause the error message.

5.3.2.1.2. TCP SOCKETS CONFIGURATION

Choosing **TCP Sockets** is configured the serial port of ADA-13040MG, for direct communication with PC by the use of TCP socked. Data sending by application to TCP socked are transferred through network to ADA-13040MG converter and are present on his serial port. To save selected configuration, press the button [**Apply**].

5.3.2.1.2.1. TCP SERVER AND CLIENT CONFIGURATION

After saving the TCP Sockets profile, will open section **TCP Server Settings** (picture below), includes configuration of:
- port for Telnet service; standard 2001,
- port for serial port service; standard 2101 (through this port are transferred data to serial port of converter),
- port for security access to serial port service; standard 2601 (through this port are transferred data to serial port of converter),

and possibility of selection **Enable TCP Keep Alive** – connection will be kept, even if the data is not transmitted over the network.

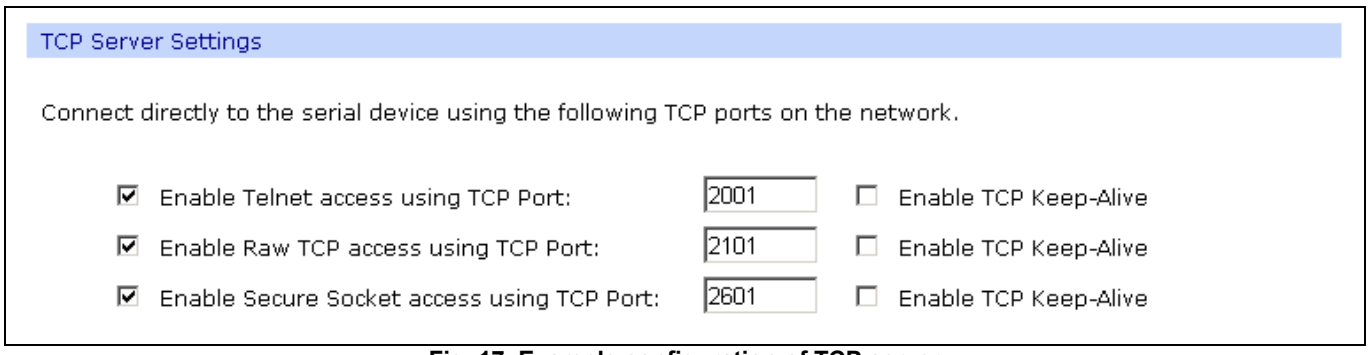
TCP Server Settings
Connect directly to the serial device using the following TCP ports on the network.
Enable Telnet access using TCP Port:
2001
Enable TCP Keep-Alive
Enable Raw TCP access using TCP Port:
2101
Enable TCP Keep-Alive
Enable Secure Socket access using TCP Port:
2601
Enable TCP Keep-Alive

Fig. 17. Example configuration of TCP server

For configuration of **TCP Client Settings** (Fig 18), select **Automatically establish TCP connections,** connection between client and TCP server will be automatically. Then select **Always connect and maintain connection** option and in section **Establish connection to the following network service** enter IP address of device to which TCP client will send data, select service and enter port. There is also possible to select an option **Enable TCP Keep-Alive** – connection will be kept, even if the data is not transmitted over the network.
For saving the configuration press **[Apply].**

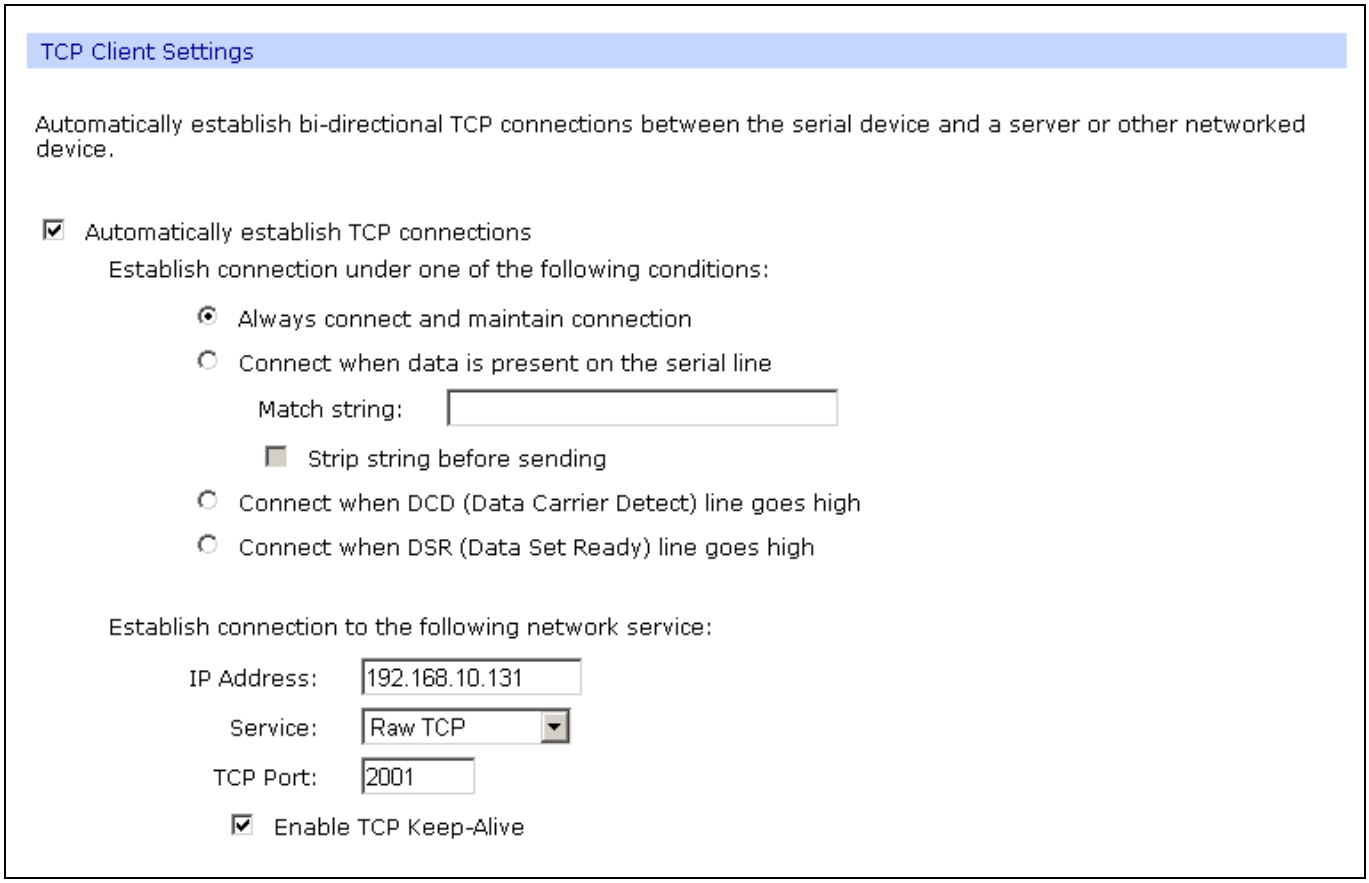
TCP Client Settings
Automatically establish bi-directional TCP connections between the serial device and a server or other networked device.
Automatically establish TCP connections
Establish connection under one of the following conditions:
Always connect and maintain connection
Connect when data is present on the serial line
Match string:
Strip string before sending
Connect when DCD (Data Carrier Detect) line goes high
Connect when DSR (Data Set Ready) line goes high
Establish connection to the following network service:
IP Address:
192.168.10.131
Service:
Raw TCP
TCP Port:
2001
Enable TCP Keep-Alive

Fig. 18. Example configuration of TCP client

ATTENTION !
Default port of serial port service is 2101.
If on the local network is conflict with other network service using the same port, in the converter's port configuration change number of port into another for the server and client service .

5.3.2.1.2.2. THE 'ENABLE TCP KEEP-ALIVE' OPTION CONFIGURATION

Option **Enable TCP Keep-Alive** keeps connection between server and client, even if the data is not transmitted over the network and reconnection in case of interruption.
Configuration of this option can be made by selection **Configuration > Network > Advanced Network Settings > TCP Keep-Alive Settings.** In this section can be configured:

- **Idle Time** – specifies the period of time (scope 10 sec. - 24 hours) that a TCP connection has to be idle before a keep-alive is sent.
- **Probe Interval** – the time in seconds between each keep-alive probe (scope 10 – 75 sec.),
- **Probe Count** – the number of times TCP probes the connection to determine (scope 5 – 30 trials).

5.3.2.1.2.3. SERIAL PORT TRANSMISSION PARAMETERS CONFIGURATION

For proper operation of ADA-13040MG with device connected to his RS485/RS422 serial port, should be set the same transmission parameters for both devices.
Select **Basic Serial Settings** and enter **Baud Rate**, **Data Bits**, **Parity**, **Stop Bits,** the same parameter like has device connected to the serial port of the converter.

5.3.2.1.3. UDP SOCKETS CONFIGURATION

Choosing **UDP Sockets** is configured the serial port of ADA-13040MG converter for direct communication with PC or other device connected to the network by the use of UDP socked. Data sending by application or other device/s to this port are transferred through LAN/WAN to ADA-13040MG converter and are present on his serial port. Press [**Apply**] for save the configuration

5.3.2.1.3.1. UDP CLIENT & SERVER CONFIGURATION IN CASE OF MASTER DEVICE

After saving the UDP Sockets profile, will open section **UDP Server Settings** with operating parameters like on picture below. Set an access to UDP server on e.g. 2101 port. Then select **Automatically send serial data** in section **UDP Client Settings**, this automatically send received data by the use UDP client service to the SLAVE device connected to LAN/WAN through e.g. ADA-13020, ADA-13028L, ADA-13040MG, ADA-13110, ADA14040, ADA-14040.
On lists **Send data to the following network services** are addresses of network devices and ports to which will be send data. In field:

- **Description** - enter e.g. location of the converter and SLAVE device,
- **Send To** - enter IP address of e.g. converter, connected to SLAVE device,
- **UDP Port** - enter the number of port on which is working UDP Server of converter connected to SLAVE device and press **[Add]**

In the section **Send data under any of the following conditions** is recommended to set parameters like on picture bellow.
For saving the configuration of UDP client and server for MASTER device, press **[Apply]**.

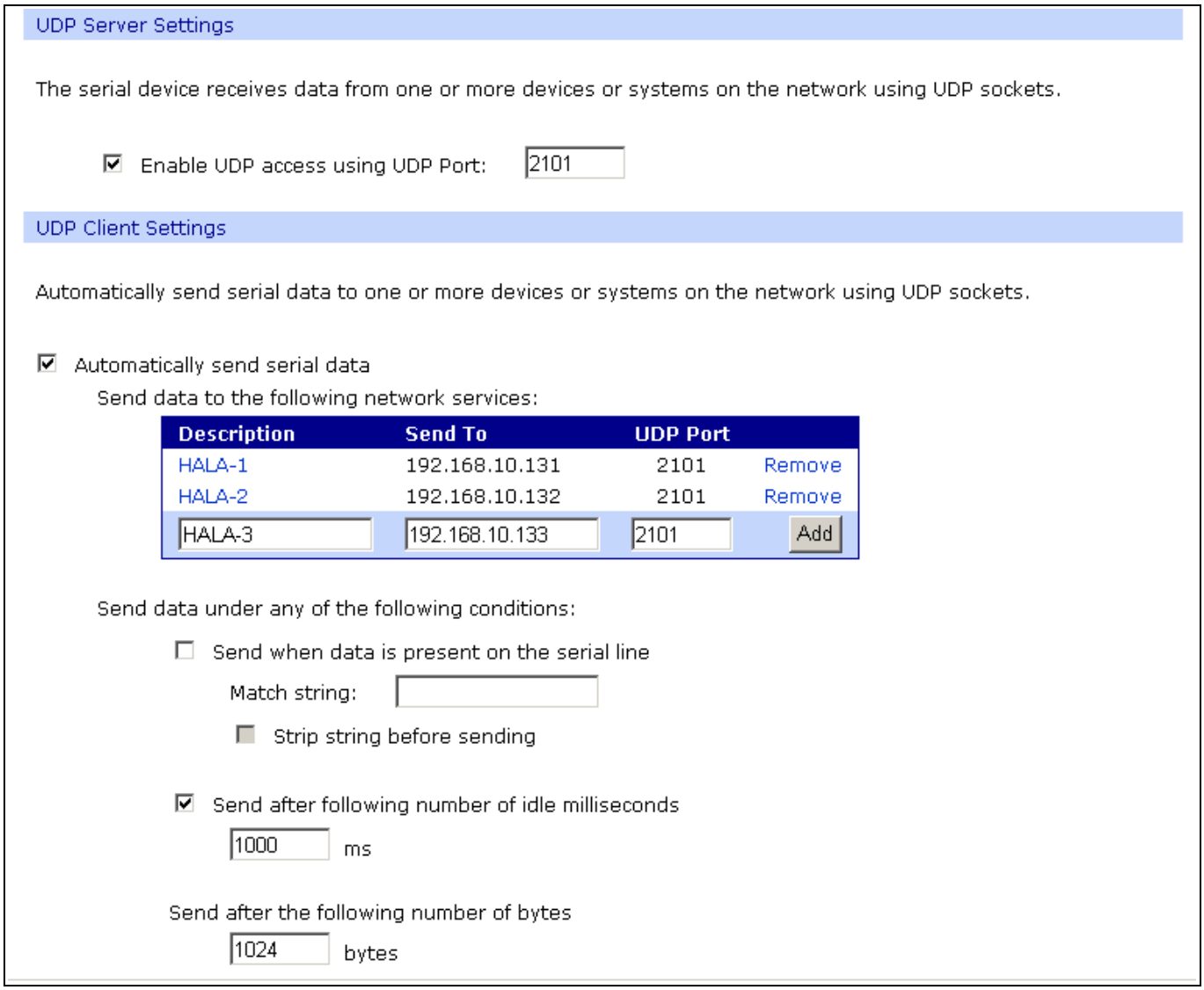

Fig. 19. Example configuration of the UDP server&client on converter connected to MASTER device

5.3.2.1.3.2. UDP CLIENT & SERVER CONFIGURATION IN CASE OF SLAVE DEVICE

Set operating parameters of UDP server for SLAVE device connected via serial port to ADA-13040MG, eg like on picture below. Set an access to UDP server on e.g. 2101 port. Then select **Automatically send serial data** in section **UDP Client Settings**, this automatically send received data by the use UDP client service to the MASTER device connected to LAN / WAN through e.g. ADA-13020, ADA-13028L, ADA-13040MG, ADA-13110, ADA14040, ADA-14040.
On lists **Send data to the following network services** are addresses of network devices and ports to which will be send data. In field:

- **Description** - enter e.g. location of the converter and MASTER device,
- **Send To** - enter IP address of e.g. converter, connected to MASTER device,
- **UDP Port** - enter the number of port on which is working UDP Server of converter connected to MASTER device and press **[Add]**

In the section **Send data under any of the following conditions** is recommended to set parameters like on picture bellow.
For saving the configuration of UDP client and server for SLAVE device, press **[Apply]**.

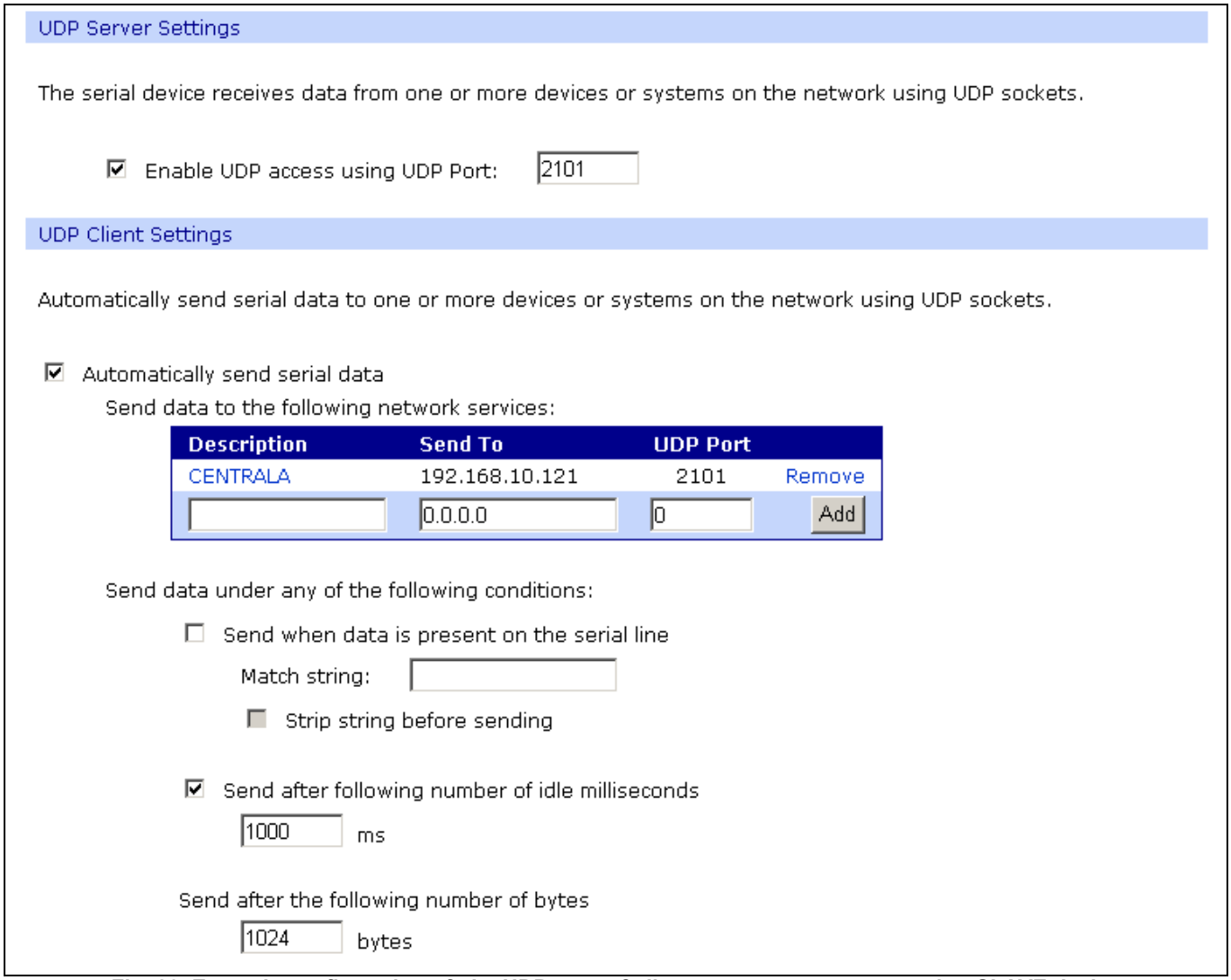
UDP Server Settings
The serial device receives data from one or more devices or systems on the network using UDP sockets.
Enable UDP access using UDP Port:
2101
UDP Client Settings
Automatically send serial data to one or more devices or systems on the network using UDP sockets.
Automatically send serial data
Send data to the following network services:
Description
Send To
UDP Port
CENTRALA
192.168.10.121
2101
Remove
0.0.0.0
0
Add
Send data under any of the following conditions:
Send when data is present on the serial line
Match string:
Strip string before sending
Send after following number of idle milliseconds
1000
ms
Send after the following number of bytes
1024
bytes

Fig. 20. Example configuration of the UDP server&client on converter connected to SLAVE device

ATTENTION !
Default port of serial port service is 2101.
If on the local network is conflict with other network service using the same port, in the converter's port configuration change number of port into another for the server and client service.

5.3.2.1.3.3. SERIAL PORT TRANSMISSION PARAMETERS

For proper operation of ADA-13040MG with device connected to his RS485/RS422 serial port, should be set the same transmission parameters for both devices.
Select **Basic Serial Settings** and enter **Baud Rate**, **Data Bits**, **Parity**, **Stop Bits,** the same parameter like has device connected to the serial port of the converter.

5.3.2.1.4. SERIAL BRIDGE PROFILE CONFIGURATION

Choosing the **Serial Bridge** profile enable direct communication between two devices connected to two ADA-13040MG converters over the network as if they were connected with a serial cable. A properly configured ADA-13040MG will start automatically communication with each other. Press [**Apply**] for save the configuration
After saving the Serial Bridge profile, will open section **Serial Bridge Settings** (fig.21) with operating parameters like on picture below. Select **Initiate serial bridge to the following device** option and enter IP address and 2101 Port of ADA-13040MG with which to create the serial bridge over the network. Additionally can be selected [**Enable TCP Keep-Alive**] option which keeps connection even if the data is not transmitted. Select **Allow other devices to initiate serial bridge** and enter 2101 port on which other the converter will automatically start communication and can be set also [**Enable TCP Keep-Alive**] option which keeps connection even if the data is not transmitted.

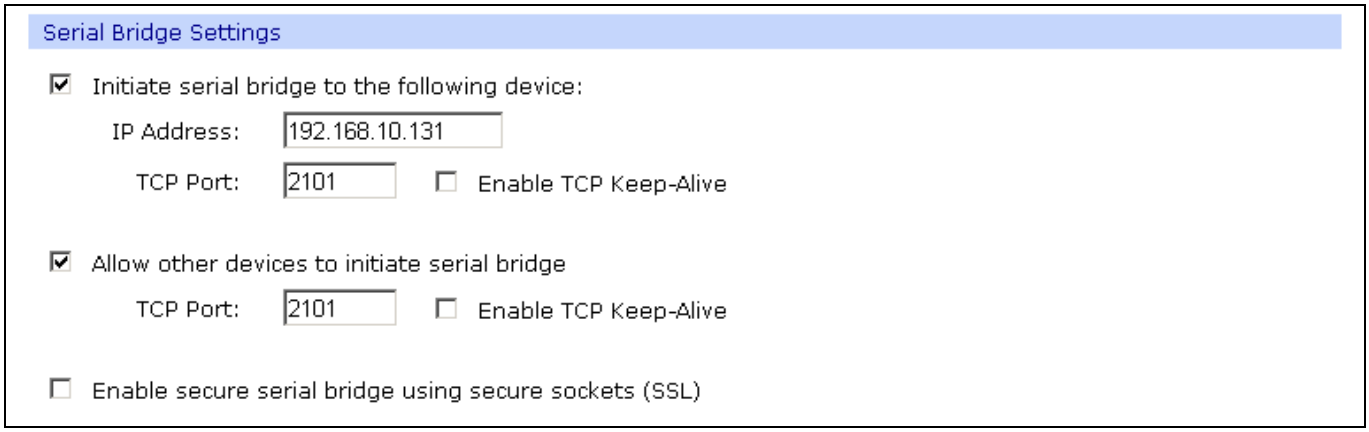

Fig. 21. Example configuration of TCP Serial Bridge

ATTENTION !
Default port of serial port service is 2101.
If on the local network is conflict with other network service using the same port, in the converter's port configuration change number of port into another for the server and client service.

5.3.2.1.4.1. SERIAL PORT TRANSMISSION PARAMETERS

For proper operation of ADA-13040MG with device connected to his RS485/RS422 serial port, should be set the same transmission parameters for both devices.
Select **Basic Serial Settings** and enter **Baud Rate**, **Data Bits**, **Parity**, **Stop Bits,** the same parameter like has device connected to the serial port of the converter.

5.3.2.1.5. INDUSTRIAL AUTOMATION (MODBUS GATEWAY) CONFIGURATION

Choosing the **Industrial Automation (Modbus Gateway, Fig.16)** profile, will be possible to configure ADA-13040MG for communication by the use of MODBUS-RTU master/slave or MODBUS-ASCII master/slave protocol. The converter converts frames of MODBUS-RTU/ASCII protocol to MODBUS-TCP and send via WLAN/LAN/WAN to devices with MODBUS-TCP protocol or other servers (ADA-14040, ADA14110, ADA-13040MG, ADA-13110MG) operating in **Industrial Automation (MODBUS Gateway)** mode with connected MODBUS-RTU/ASCII devices. Press **[Apply]** for saving this profile.

5.3.2.1.5.1. CONFIGURATION FOR COMMUNICATION WITH DEVICES MODBUS-MASTER TYPE

In section **Industrial Automation Settings**, press **[Change Protocol]** link. Then in section **Select IA Protocol** (figure below) select type of device, connected to serial port of ADA-13040MG, as **Serial Master** and MODBUS-RTU or MODBUS-ASCII protocol for communication between connected devices. Press **[Apply]** for saving configuration.

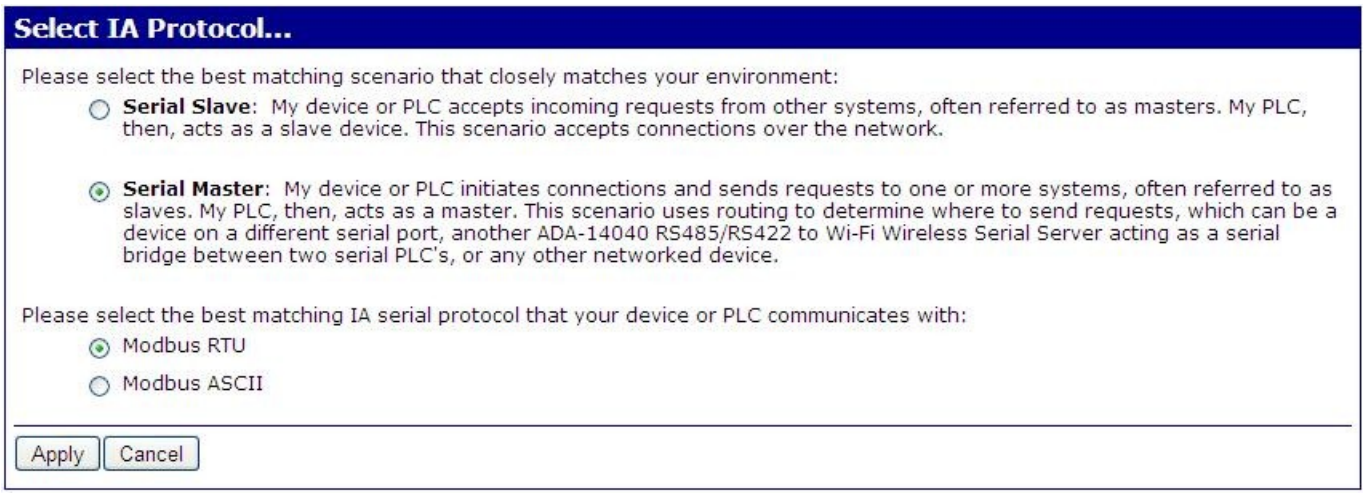
Select IA Protocol...
Please select the best matching scenario that closely matches your environment:
Serial Slave: My device or PLC accepts incoming requests from other systems, often referred to as masters. My PLC, then, acts as a slave device. This scenario accepts connections over the network.
Serial Master: My device or PLC initiates connections and sends requests to one or more systems, often referred to as slaves. My PLC, then, acts as a master. This scenario uses routing to determine where to send requests, which can be a device on a different serial port, another ADA-14040 RS485/RS422 to Wi-Fi Wireless Serial Server acting as a serial bridge between two serial PLC's, or any other networked device.
Please select the best matching IA serial protocol that your device or PLC communicates with:
Modbus RTU
Modbus ASCII
Apply
Cancel

Fig. 22. Example configuration for communication with MODBUS-MASTER devices – choice of devices and protocols

Set the options in section **Modbus RTU Settings** like on the figure below and press **[Apply].**

Industrial Automation Settings
Current Protocol: Modbus/RTU Serial Master Change Protocol...
My PLC or other IA device is connected to this serial port and needs to communicate with another PLC, device, or system on the network.
Modbus RTU Settings
Ignore incoming broadcast requests using unit address 0
Send incoming broadcast requests to this serial device
Change the Modbus unit address to 1 before sending
Enable error responses when unable to reach destination or requests time out
Apply

Fig. 23. Example configuration for communication with MODBUS-MASTER devices – Modbus RTU setting

Then select section **Slave Destinations (Packet Routing)** – figure below.
In this section press **[Add],** enter the IP address of **Slave** type devices, to which Master will send requests and receive responses.

Slave Destinations (Packet Routing)
Process and send incoming requests from the serial device to slave devices
Destination table: Table-1 Create...
Index Address Protocol Destination Action
1 Any Modbus/TCP 192.168.0.102 Up Down Remove
Add
Apply

Fig. 24. Example configuration for communication with MODBUS-MASTER devices – table configuration of SLAVE type devices

In section **Destination Settings** (fig. below) set the options of requests from **Master** device to **Slave** device, in fields:

- **Host name** - enter IP address of **Slave** device.
- **Protocol** - set protocol which will be send to **Slave** device – in this case will be Modbus/TCP.
- **Transport** - set TCP protocol .
- **Network port** - set port 502.

Press [**Apply**] for saving configuration. Then press again **[Add]** for adding another **Slave** device.
Then select section **Slave Destinations (Packet Routing)**, when all **Slave** devices are added and set, press **[Apply].**

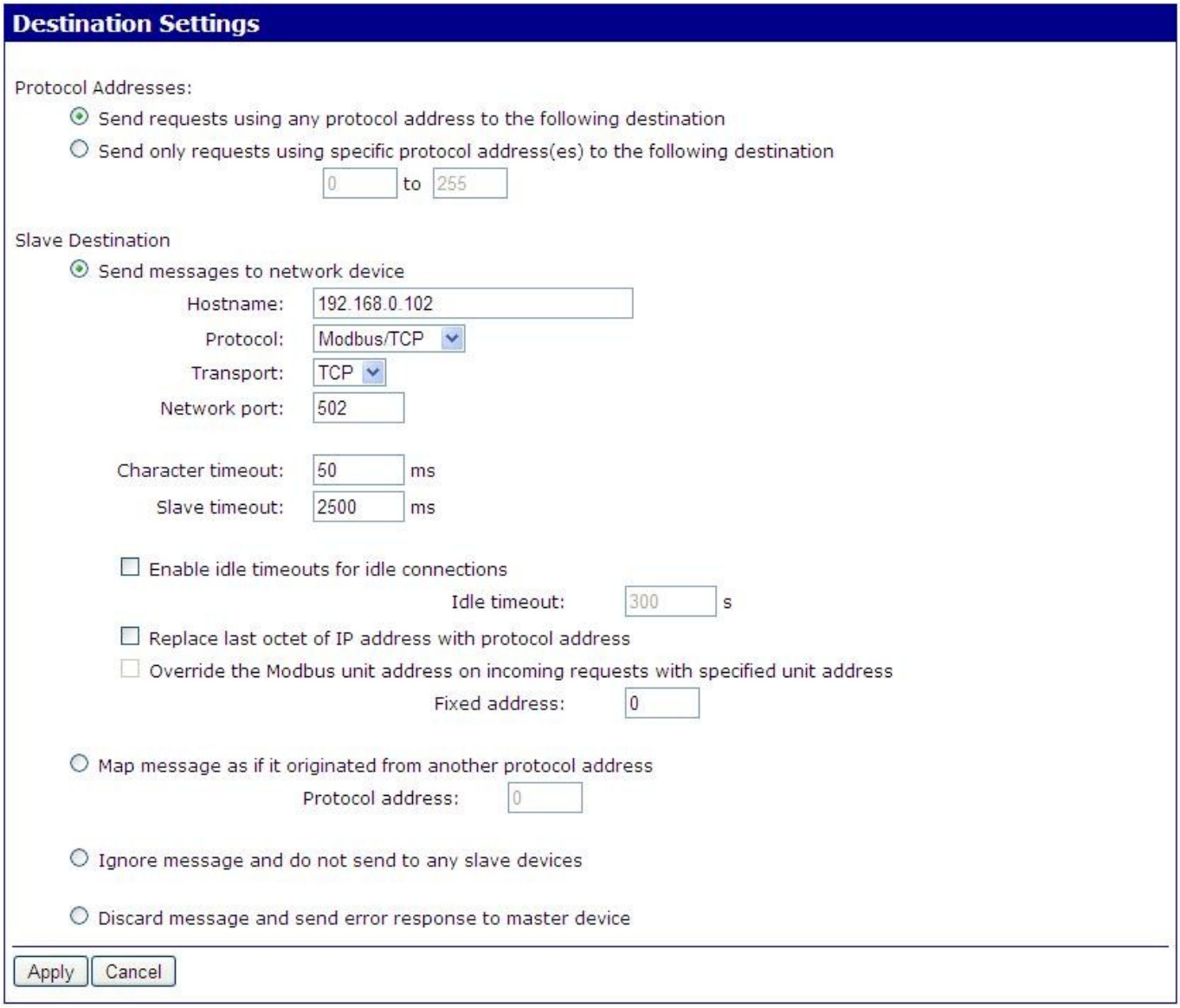

Fig. 25. Example configuration for communication with MODBUS-MASTER devices – table entry configuration for SLAVE type devices

On section **Advanced Protocol Settings** (fig. below), set the time out by entry:

- **Character timeout** - value in ms., maximum delay or gap betweens bytes of a message – default 20 ms.
- **Message timeout** - value in ms., maximum delay or gap betweens bytes of a message – default 2500ms; this time must be less than the Timeout set on SLAVE and MASTER MODBUS-RTU devices.

For saving the **Advanced Protocol Settings** press [**Apply**].

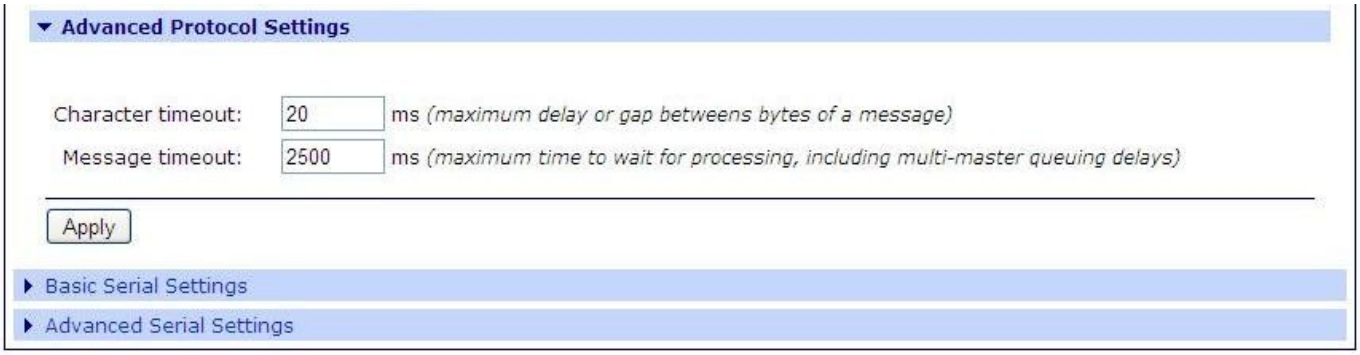

Fig. 26. Example configuration for communication with MODBUS-MASTER devices – configuration of timeout parameters for MASTER type device

5.3.2.1.5.2. CONFIGURATION FOR COMMUNICATION WITH MODBUS-SLAVE TYPE DEVICE

In section **Industrial Automation Settings**, press **[Change Protocol]** link. Then in section **Select IA Protocol** (figure below) select type of device, connected to serial port of ADA-13040MG as **Serial Slave** and MODBUS-RTU or MODBUS-ASCII protocol for communication between connected devices. Press **[Apply]** for saving configuration.

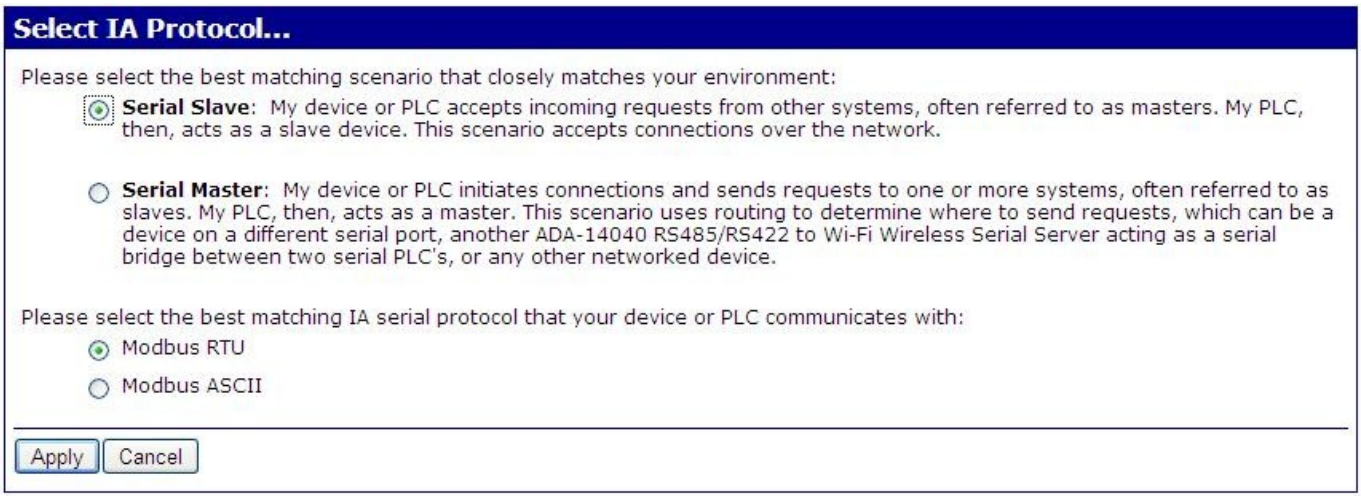
Select IA Protocol...
Please select the best matching scenario that closely matches your environment:
Serial Slave: My device or PLC accepts incoming requests from other systems, often referred to as masters. My PLC, then, acts as a slave device. This scenario accepts connections over the network.
Serial Master: My device or PLC initiates connections and sends requests to one or more systems, often referred to as slaves. My PLC, then, acts as a master. This scenario uses routing to determine where to send requests, which can be a device on a different serial port, another ADA-14040 RS485/RS422 to Wi-Fi Wireless Serial Server acting as a serial bridge between two serial PLC's, or any other networked device.
Please select the best matching IA serial protocol that your device or PLC communicates with:
Modbus RTU
Modbus ASCII
Apply
Cancel

Fig. 27. Example configuration for communication with MODBUS-SLAVE devices – choice of devices and protocols

Set options in section **[Modbus RTU Settings]** eg. As on picture below. Press **[Apply]** for saving configuration.

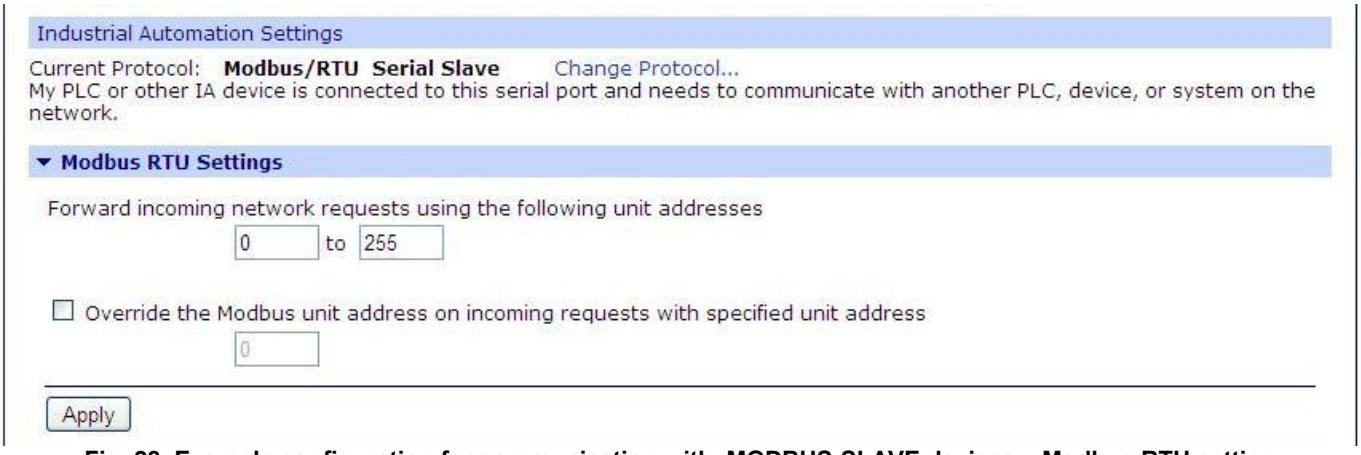
Industrial Automation Settings
Current Protocol: Modbus/RTU Serial Slave Change Protocol...
My PLC or other IA device is connected to this serial port and needs to communicate with another PLC, device, or system on the network.
Modbus RTU Settings
Forward incoming network requests using the following unit addresses
0 to 255
Override the Modbus unit address on incoming requests with specified unit address
0
Apply

Fig. 28. Example configuration for communication with MODBUS-SLAVE devices – Modbus RTU setting

Go to section **Modbus/TCP Network Settings [Global]**, configuration options set as on the figure below. Press **[Apply]** for saving configuration.

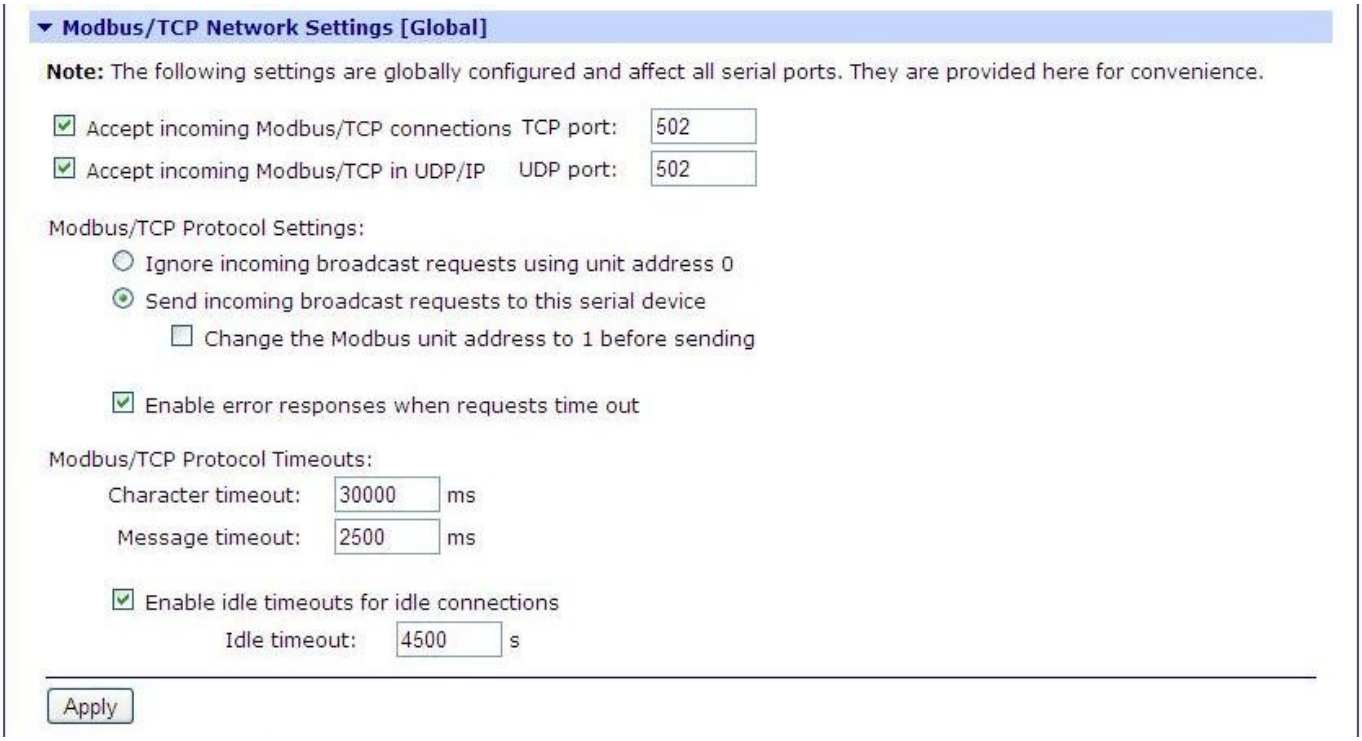
Modbus/TCP Network Settings [Global]
Note: The following settings are globally configured and affect all serial ports. They are provided here for convenience.
Accept incoming Modbus/TCP connections TCP port: 502
Accept incoming Modbus/TCP in UDP/IP UDP port: 502
Modbus/TCP Protocol Settings:
Ignore incoming broadcast requests using unit address 0
Send incoming broadcast requests to this serial device
Change the Modbus unit address to 1 before sending
Enable error responses when requests time out
Modbus/TCP Protocol Timeouts:
Character timeout: 30000 ms
Message timeout: 2500 ms
Enable idle timeouts for idle connections
Idle timeout: 4500 s
Apply

Fig. 29. Example configuration for communication with MODBUS-SLAVE devices

ATTENTION !
Default port of Industrial Automation (Modbus Gateway) service is 502.
If on the local network is conflict with other network service using the same port, in the converter's port configuration change number of port into another for the server and client service.

On section **Advanced Protocol Settings** (fig. below), set the time out by entry:
- **Character timeout** - value in ms., maximum delay or gap betweens bytes of a message – default 20 ms.
- **Message timeout** - value in ms., maximum delay or gap betweens bytes of a message – default 2500ms; this time not must be less than the timeout set on MODBUS MASTER devices / SCADA/HMI software.

For saving the **Advanced Protocol Settings** press [**Apply**].

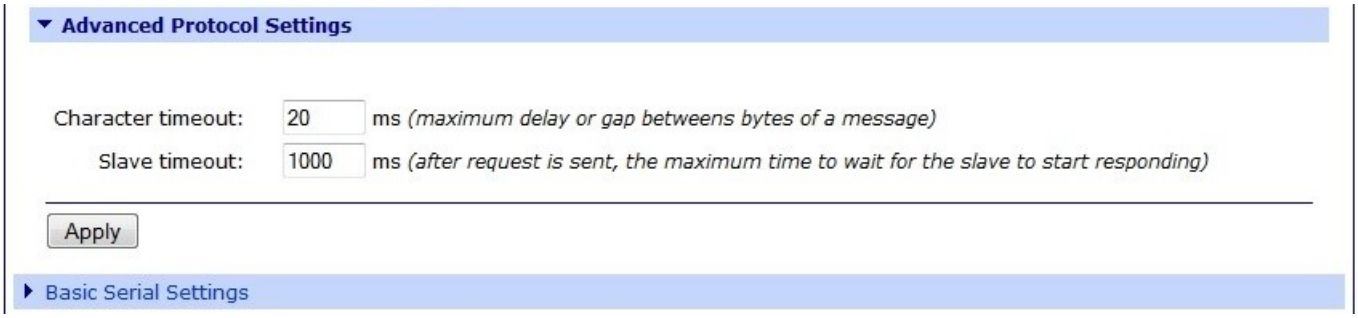
Advanced Protocol Settings
Character timeout:
20
ms (maximum delay or gap betweens bytes of a message)
Slave timeout:
1000
ms (after request is sent, the maximum time to wait for the slave to start responding)
Apply
Basic Serial Settings

Fig. 30. Example configuration for communication with MODBUS-SLAVE devices – configuration of timeout parameters for SLAVE type device

5.3.2.1.5.3. SERIAL PORT TRANSMISSION PARAMETERS

For proper operation of ADA-13040MG with devices Modbus-Master or Modbus-Slave types, connected to his RS485/RS422 serial port, should be set the same transmission parameters for both devices.
Select **Basic Serial Settings** and enter **Baud Rate**, **Data Bits**, **Parity**, **Stop Bits,** the same parameter like has device connected to the serial port of the converter.

5.3.3. SYSTEM SETTINGS

Select on left panel menu **Configuration -> System** and then on right will be selections as follow:
- **Device Identity Settings** – allows to add name of converter, describe the location and add identification number,
- **Simple Network Management Protocol Settings (SNMP)** – allows to make the configuration of management protocol SNMP.

5.3.4. USERS CONFIGURATION

On the configuration page **Users** are two sections:
- **Users**
- **Configure Users**

The section **Users** allows to configure the method of login to ADA-13040MG. Selecting the option **Enable user logins** means that after enter the address http://<adres-ip-konwertera>/admin/administration.htm to internet browser, will open login window and will be necessary to enter user name and password.
The section **Configure Users** allows to add additional user, change password, configure access and permissions for each defined users.

5.3.4.1. CHANGING USER MANE AND PASSWORD

Changing the default user root and password, can be done as follow :
1. press user mane ***root*** in section **Users Configuration->Configure Users,**
2. enter new user name and password.
3. press [**Apply**] for saving.

5.3.4.2. ADDING NEW USER WITH LIMITED PERMISSIONS FOR CONFIGURATION OR MANAGEMENT

For adding new user with limited permissions for configuration or management follow the steps below:
1.From menu **Configuration** select **Users,**
2. In section **Configure Users,** press **[New...]**,
3. Enter user mane (eg. **admin**) and password – twice, and press **[Apply]**,
4. Will open the page **Users Configuration**, where in section **Configure Users**, will be new user name.
Now it is possible to configure access permissions to the converter and permissions for configuration of this new user.
Configuration of access to converter:
1.From menu **Configuration** select **Users,**
2. In section **Configure Users**, select added user eg. **admin**,
3. Will open the page **User Configuration** – admin, where are sections:
A/ **User Configuration** – possibility of rename user and password,
B/ **User Access** - method of access to converter from the network:
Allow command line access – access using the Command Line Interface - **telnet**,
Allow web interface access – access using the internet browser.

C/ **User Permissions -** user permissions to configuration and management of the ADA-13040MG converter, where are an options:
None - no permission,
Read - permission to read,
Read Self - permission to read own settings, but not other users.
Read/Write - full permission to read and write the setting.
Read/Write Self - permission to read and write own setting, but not other users.
Read All/Write Self - permission to read the setting for all users and modify only own setting (not other users).
Execute - permission to execute (start).

4. All changes are saved by pressing **[Apply]**.

5.3.5. MANAGMENT

On left panel in menu **Management** are to sections :
- Serial Ports
- Connections

5.3.5.1. SERIAL PORTS MANAGEMENT

Section **Serial Ports** allows to identification connections/disconnection to the serial port of ADA-13040MG through the network.

5.3.5.2. CONNECTIONS MANAGMENT

Section **Connections** allows to identification connections/disconnection to the ADA-13040MG through the network.

5.3.6. ADMINISTRATION

The menu **Administration** allows :
– to delete/upload files with Java applet,
– to backup/restore configuration of converter,
– to update Firmware,
– to restore the factory default settings,
– to display system details information,
– to reboot the ADA-13040MG.

5.3.6.1. FILE MANAGEMENT

Section **File Management** enables upload and delete Web and Java Applets provided by manufacturer. Uploaded index.htm or index.html allows to automatically run the page in the web browser after entering **http://address-ip-convertera/FS/WEB/index.htm** and login to ADA-13040MG.

5.3.6.2. BACKUP & RESTORE CONFIGURATION

Section **Backup/Restore** enables backup to file or restore from file the user configuration of the converter.

5.3.6.3. FIRMWARE UPDATE

Section **Update Firmware** enables to make the update firmware form the file. Firstly should be done update the POST software before updating the firmware – more details available on the web page http://www.cel-mar.pl.

5.3.6.4. FACTORY DEFAULT SETTINGS

The converter was configured by the manufacturer.
To restore factory default settings, select from menu **Factory Default Settings**. After that the converter will automatically reboot.

5.3.6.5. SYSTEM INFORMATION

Section **System Information** displays:
- **General** – device model , MAC address, firmware version, Boot version, POST version and more.
- **GPIO** – not applicable in ADA-13040MG .
- **Serial** – port description, current settings of serial port, status of controlling lines and the statistics data transfer through the serial port.
- **Network** – show statistics of ETHERNET interface for IP, TCP, UDP, ICM protocols.

5.3.6.6. REBOOT

Section **Reboot** allows to make software reset of ADA-13040MG. Pressing [**Reboot**] will start rebooting of server during 1 min.

5.3.6.7. LOGOUT – ENDING MANAGEMENT AND CONFIGURATION

After completion of the configuration or administration should be pressing **Logout** on left panel – logout from www server of ADA-13040 MG converter.

6. USING VIRTUAL PORT SERVICE [REALPORT]

6.1. VIRTUAL PORT DRIVER INSTALLATION IN WINDOWS XP

The installation of virtual serial port drivers should be done for the CD, by choosing:
- Drivers/Win98SEME – for Windows 98, Windows 98SE, Windows ME Operating systems,
- Drivers/Win2000 – for Windows2000 Operating systems,
- Drivers/WinXP2003Vista_x86_x64 – for Windows XP, Windows Server2003, Windows Vista Operating systems.

Installation of Virtual serial port drivers is as follow:

1. Connect ADA-13040MG to ETHERNET (see p.3.2.1) and power (see p.3.2.6),
2. Press [**Start**] and select [**Run...**]
3. in the dialog window [**Run**] press [**Browse**]
4. select „**My computer**" and CD-Rom with „**ADANET_DRV**".
5. select catalog **Drivers/WinXP2003Vista_x86_x64**.
6. select file „**Setup32.exe**" for 32-bits system or „**Setup64.exe**" for 64-bits and press [**Open**].
7. when the installation window will appear press [**Next**] .
8. will start the searching for converters in the network, found devices will be added to the list.
9. select the converter from the list for installation of virtual port driver and press [**Next**].
10. in window Describe the device select or not the Starting Com port and press [**Finish**]. The driver will be installed.

The Virtual Serial Port Drivers can be installed without connection of ADA-13040MG to ETHERNET and it is as follow:

1. press [**Start**] button, select [**Run...**]
2. in the dialog window [**Run**] press [**Browse**]
3. select „**My computer**" and CD-Rom with „**ADANET_DRV**".
4. select catalog **Drivers/WinXP2003Vista_x86_x64**.
5. select file „**Setup32.exe**" for 32-bits system or „**Setup64.exe**" for 64-bits and press [**Open**].
6. when the installation window will appear press [**Next**] .
7. will start the searching for converters in the network.
8. if no devices were not found press [**Next**].
9. should be set in the window Describe the device:

– IP address for converter,
– number of installing COM port (No. Ports)
– Starting COM

and press [**Finish**]. The driver will be installed.

In this way installed virtual port can require the configuration in case of connecting the converter to network.

6.2. REALPORT CONFIGURATION IN WINDOWS XP

After installation of RealPort drivers, can be done configuration by the use the Device Manager of Windows and it is as follow:
1. Press [**Start**], select [**Properties/Setting**], press [**Control Panel**].
2. Double click icon [**Administrative Tools**] and [**Device Manager**]
3. Press [**Ports (COM & LPT)**]. On fig. 31 is shown available serial ports COM1, COM2 and **COM3** marked as **ADA-13040MG** which was created after installation of RealPort driver.
4. Then select [**Multi-port Serial Adapter**], there will be the name **ADA-13040MG**.
5. Double click the name and the window [**Properties**] will appear.
6. Select [**Advanced**] and press [**Properties**].
7. Enter **new name of virtual port for converter**. In the window [**Advanced Properties**] click [**ADA-13040MG**] and then select [**Properties**], press [**Rename Ports**], now it is possible to change the name of virtual port driver for example COM5, COM11 etc. To accept the changes press [**OK**].
8. **Select IP address, MAC, DNS server for communication with virtual port driver**. In the window [**Advanced Properties**] click [**ADA-13040MG**] and then select [**Network**] (Fig. 32), and set the **IP address**, **MAC Address** or **DNS name** of converter for communication with virtual port driver.
9. In the next window press [**OK**] to accept the changes.

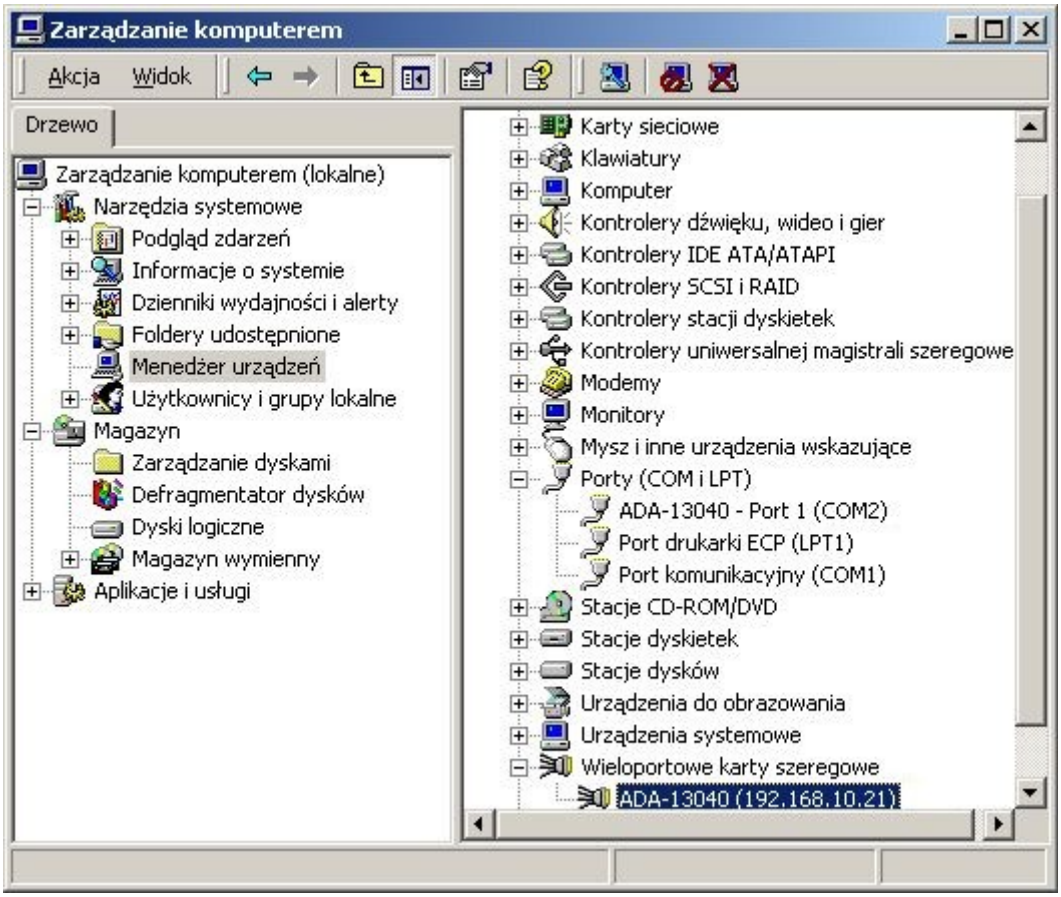

Fig. 31. Devices view on Windows XP

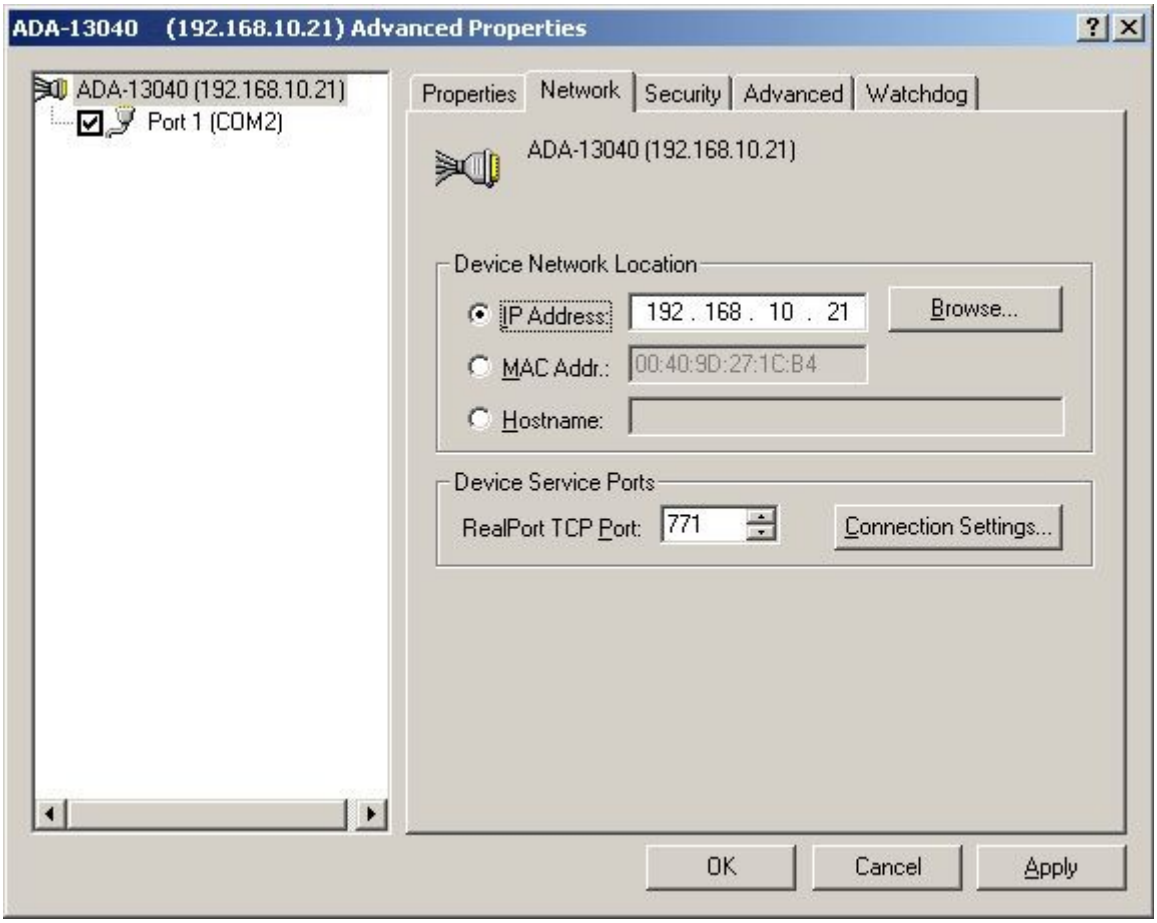

Fig. 32. Example configuration of multi-port serial adapter

7. FACTORY DEFAULT

Parameter	*Value*
User name	root
Password	dbps
IP address	Obtain an IP address automatically using DHCP
Operating mode	RealPort
Bout rate[bits/sec]	9600
Number of data bits	8
Parity Control	no
Number of stop bits	1
Flow Control	no

8. PROBLEMS

Problem	*Solution*
I forgot the password	Restoring Default Settings according to steps below: 1. Power OFF the ADA-13040MG 2. Remove the cover of ETHERNET connector, 3. Press RESET “RST” and holding the button turn the power on of ADA-13040MG, 4. Release the button after 20 sec. when the converter will start with default settings. Restoring Default Settings deletes existing configuration and the proper configuration should be loaded to the converter form the backup.
I changed the configuration and the converter isn't functioning.	1. Enter in the Internet browser http://address-ip-server, 2. Select the menu **[Factory Default Settings]** press **[Restore]**.

9. VERSIONS

ADA-13040MG - [ ] - [ ] - [ ]

Electronic versions:			
Basic	**1**		
Galvanic isolation:			
1kV DC (2-WAY)		**2**	
3kV DC (2-WAY)		**3**	
1kV DC (3-WAY)		**23**	
3kV DC (3-WAY)		**33**	
Terminal & Terminal Cover:			
Cover without inlets, screw terminal block			**1**
Cover without inlets, screw terminal block			**2**
Cover without inlets, plug-in screw terminal block			**3**

Order example:

Product Symbol: **ADA-13040MG-1-23-3**

1 – basic version of electronic,

23 - galvanic isolation 1kV= (3-way) – recommended,

3 - cover without inlets, plug-in screw terminal block,

10. SPECIFICATION

Parameters		
	ETHERNET	**RS485/RS422**
Connector	RJ45	Screw terminal block - max. Ø 2,5mm^2
Max. Line length	LAN up to 150 m	1200 m
Max. number of connected device	Depend on addressing type in network	32
Max. baud rate	10/100 Mbit/s	Up to 230,4 kbps

Transmission line	4-pair twisted cable, UTP 4x2x0,5 (24AWG), shield inside large interferences STP 4x2x0,5 (24AWG)).	1-2-pair twisted cable, eg. UTP 1x2x0,5 (24AWG) /2x2x0,5(24AWG), shield inside large interferences.
Standards	IEEE 802.3	EIA-485, CCITT V.11
Transmission line	asynchronous transmission half duplex or full duplex.	
Optical Signalization	• PWD – green LED power supply, • RX - red LED data receiving on RS485/RS422, • TX - yellow LED data transmission via RS485/RS422.	
Nominal Operating Conditions		
Power requirements	10 – **24** – 30 VDC	
Power Cable	Recommended length – up to 3m	
Power	3W	
Protection from reverse power polarization	yes	
Galvanic Isolation	1kV or 3kV and 2-WAY or 3-WAY	
Operating temperature	0 ÷ **+23** ÷ +50°C	
Humidity	5 ÷ 95% - non-condensing	
Location during operating	Free	
Mounting	Rail mounting according to DIN35 standard / TS35.	
Electromagnetic compatibility	Resistance to disruptions PN-EN 55024. Emission of disruptions PN-EN 55022.	
Safety requiring	According to the PN-EN60950 norm.	
Environment	Commercial and light industrial.	
Casing		
Dimensions	53mm x 90mm x 58mm	
Material	Noryl UL. 94 V-O	
Degree of casing protection	IP40	
Degree of terminal protection	IP20	
Weight	0,10 kg	
According to standards	DIN EN50022, DIN EN43880	
Storing and Transportation		
Storage temperature	-40 ÷ +70°C	
Humidity	5 ÷ 95% - non-condensing	

Dear Customer,

Thank you for purchasing **CEL-MAR Company** product.

We hope that this user manual helped connect and start up the **ADA-13040MG Converter with MODBUS GATEWAY.** We also wish to inform you that we are a manufacturer of the widest selections of data communications products in the world such as: data transmission converters with interface RS232, RS485, RS422, USB, Ethernet, Wi-Fi, Current Loop, Fibre-Optic Converters and the other.

Please contact us to tell how you like our products and how we can satisfy you present and future expectation.

CEL-MAR sp.j.
Computers Science and Electronic Factory
str Sciegiennego 219C
25-116 Kielce, POLAND

Tel.....: +48 41 362-12-46
Tel/fax.....: +48 41 361-07-70
Web.....: http://www.cel-mar.pl
Office.....: offi@cel-mar.pl
Sales department..... : sales@cel-mar.pl
Technical information .....: support@cel-mar.pl